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Canada Parliament House of Commons:
Standing Committee on External Affairs.
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HOUSE OF COMMONS

Second Session—Twenty-sixth Parliament

1964-65

Government
Publications

STANDING COMMITTEE

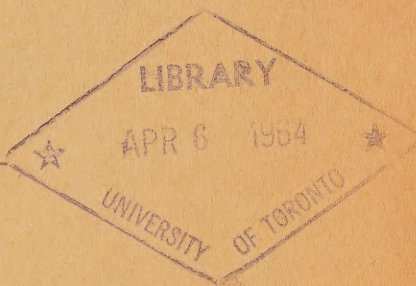
ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

PROCEEDINGS

No. 1-12



THURSDAY, MARCH 19, 1964

WEDNESDAY, MARCH 25, 1964

CONSIDERATION OF THE FIRST REPORT OF THE
SUBCOMMITTEE ON AGENDA AND PROCEDURE

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

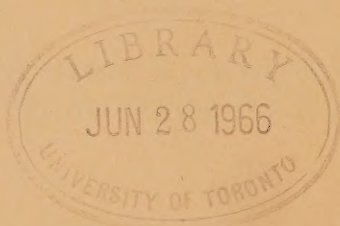
| | | |
|--|---|------------------------------|
| Brewin, ¹ | Fleming (<i>Okanagan-Revelstoke</i>), | Macquarrie, |
| Byrne, | Forest, | Martineau, |
| Cadieux (<i>Terrebonne</i>), | Gelber, | Matheson, |
| Cameron (<i>Nanaimo-Cowichan-the Islands</i>), | Groos, | Nesbitt, |
| Cashin, | Haidasz, | Patterson, |
| Casselman (Mrs.), | Herridge, | Pennell, |
| Chatterton, | Kindt, | Plourde, |
| Davis, | Laprise, | Pugh, ² |
| Deachman, | Leboe, | Regan, |
| Dinsdale, | Macdonald, | Ryan, |
| Fairweather, | MacEwan, | Stewart, |
| | | Turner, |
| | | Willoughby ² —35. |

(Quorum 10)

Dorothy F. Ballantine
Clerk of the Committee.

¹Mr. Brewin was replaced by Mr. Scott on March 18, and he in turn replaced Mr. Scott on March 24.

²Replaced Messrs. Coates and Monteith on March 17, 1964.



1088766

ORDERS OF REFERENCE

MONDAY, March 9, 1964.

Ordered.—That the Treaty between Canada and the United States of America relating to co-operative development of the water resources of the Columbia River Basin, signed at Washington on January 17th, 1961, together with the Protocol containing modifications and clarifications to the Treaty annexed to an Exchange of Notes between the Governments of Canada and the United States signed on January 22nd, 1964, be referred to the Standing Committee on External Affairs.

WEDNESDAY, March 11, 1964.

Resolved.—That the following Members do compose the Standing Committee on External Affairs:

MESSRS.

| | | |
|--|---|------------|
| Brewin, | Fleming (<i>Okanagan-Revelstoke</i>), | Martineau, |
| Byrne, | Forest, | Matheson, |
| Cadieux (<i>Terrebonne</i>), | Gelber, | Monteith, |
| Cameron (<i>Nanaimo-Cowichan-The Islands</i>), | Groos, | Nesbitt, |
| Cashin, | Haidasz, | Patterson, |
| Casselman (Mrs.), | Herridge, | Pennell, |
| Chatterton, | Kindt, | Plourde, |
| Coates, | Laprise, | Regan, |
| Davis, | Leboe, | Ryan, |
| Deachman, | Macdonald, | Stewart, |
| Dinsdale, | MacEwan, | Turner—35. |
| Fairweather, | Macquarrie, | |

(Quorum 10)

WEDNESDAY, March 11, 1964.

Ordered.—That the said Committee be empowered to examine and inquire into all such matters and things as may be referred to it by the House; and to report from time to time its observations and opinions thereon, with power to send for persons, papers and records.

TUESDAY, March 17, 1964.

Ordered.—That the names of Messrs. Pugh and Willoughby be substituted for those of Messrs. Coates and Monteith respectively on the Standing Committee on External Affairs.

WEDNESDAY, March 18, 1964.

Ordered.—That the name of Mr. Scott be substituted for that of Mr. Brewin on the Standing Committee on External Affairs.

STANDING COMMITTEE

THURSDAY, March 19, 1964.

Ordered,—That the Standing Committee on External Affairs be empowered to print such papers and evidence as may be ordered by the Committee, and that Standing Order 66 be suspended in relation thereto; and that it be granted leave to sit while the House is sitting.

Attest.

LEON-J. RAYMOND,
The Clerk of the House.

TUESDAY, March 24, 1964.

Ordered,—That the name of Mr. Brewin be substituted for that of Mr. Scott on the Standing Committee on External Affairs.

Attest.

LEON-J. RAYMOND,
The Clerk of the House.

REPORT TO THE HOUSE

March 19, 1964.

The Standing Committee on External Affairs has the honour to present its First Report.

Your Committee recommends:

1. That it be empowered to print such papers and evidence as may be ordered by the Committee, and that Standing Order 66 be suspended in relation thereto.
2. That it be granted leave to sit while the House is sitting.

Respectfully submitted,

JOHN R. MATHESON,

Chairman.

Concurred in this day.

MINUTES OF PROCEEDINGS

THURSDAY, March 19, 1964

(1)

The Standing Committee on External Affairs met at 11.00 a.m. this day for the purpose of organization.

Members present: Mrs. Casselman and Messrs. Byrne, Cadieux (*Terrebonne*), Cashin, Chatterton, Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Herridge, Kindt, Laprise, Leboe, Macdonald, MacEwan, Macquarrie, Matheson, Nesbitt, Patterson, Pennell, Plourde, Regan, Ryan, Scott, Stewart, Turner (31).

The Clerk of the Committee attending and having called for nominations, Mr. Ryan moved, seconded by Mr. Byrne, that Mr. Matheson be elected Chairman of the Committee.

There being no other nominations, Mr. Haidasz, seconded by Mr. Groos, moved that nominations close. *Carried.*

Mr. Matheson was declared duly elected Chairman. He thanked the Members for the honour conferred on him and spoke briefly on the importance of the Committee's forthcoming study of the Columbia River treaty.

The Clerk read the Orders of Reference.

Mr. Chatterton, seconded by Mr. Herridge, moved that Mr. Nesbitt be elected Vice-Chairman of the Committee. Mr. Turner, seconded by Mr. Pennell, moved that nominations close. There being no further nominations, Mr. Nesbitt was declared elected Vice-Chairman.

On motion of Mr. Davis, seconded by Mr. Deachman,

Resolved,—That permission be sought to print such papers and evidence as may be ordered by the Committee.

Moved by Mr. Leboe, seconded by Mr. Dinsdale,

Resolved,—That the Committee seek permission to sit while the House is sitting.

Mr. Turner, seconded by Mr. Stewart, moved that a Sub-Committee on Agenda and Procedure, comprised of the Chairman, the Vice-Chairman and five other persons designated by the Chairman, be appointed.

Mr. Scott, seconded by Mr. Herridge, moved that the motion be amended by adding the words "one from each of the five parties" after the phrase "five other persons".

And the question having been put on the proposed amendment of Mr. Scott, it was negative on the following division: Yeas, 6; Nays, 14.

The main motion was thereupon put by the Chair, and was carried on the following division: Yeas, 22; Nays, 1.

On motion of Mr. Herridge, seconded by Mr. MacEwan,

Resolved,—That the "Steering Committee" present its report to the Committee on Wednesday next at 9.30 a.m.

A general discussion followed, and a number of suggestions were made for consideration of the Sub-Committee on Agenda and Procedure.

At 11.30 a.m., on motion of Mr. Macdonald, the Committee adjourned to 9.30 a.m., Wednesday, March 25, 1964.

WEDNESDAY, March 25, 1964
(2)

The Standing Committee on External Affairs met at 9.30 o'clock a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Byrne, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Herridge, Laprise, Leboe, Macdonald, MacEwan, Matheson, Patterson, Pennell, Plourde, Regan, Ryan, Stewart, Turner, Willoughby (28).

The Chairman announced the names of the members of the Subcommittee on Agenda and Procedure, to act with him, as follows: Messrs. Fleming (*Okanagan-Revelstoke*), Herridge, Nesbitt, Patterson, Plourde and Turner.

The Chairman presented the first report of the Subcommittee on Agenda and Procedure dated March 24, containing the following recommendations:

1. That pursuant to its order of reference of March 19th, 1964, the committee print 2,000 copies in English and 500 copies in French of the Minutes of Proceedings and Evidence pertaining to the Columbia River Treaty.
2. That the committee meet on Tuesday, April 7th and Thursday, April 9th at 10.00 a.m., and on Friday, April 10th at 9.00 a.m.; and that decision be made later regarding the dates of further meetings.
3. That the Secretary of State for External Affairs be invited to appear before the committee on Tuesday, April 7th, to submit to the committee the principal considerations underlying the Treaty.
4. That following the presentation of the Secretary of State for External Affairs, witnesses will be heard in the following order:
 - (a) Federal government experts in their fields;
 - (b) British Columbia government representatives;
 - (c) General A. G. L. McNaughton;
 - (d) Leading engineering firms which have made studies relevant to the question;
 - (e) Expert witnesses on specific points;
 - (f) Local points of view.
5. That all witnesses, other than Federal and Provincial Ministers and their advisors (except when they are submitting written material), be required to submit fifty (50) copies of their brief to the committee clerk one week in advance of their appearance.
6. That, unless the witness had indicated to the contrary, the clerk, when distributing such briefs to the members, will append an instruction stating that the briefs are not to be disclosed to the press or any other media of communication until presented to the committee.
7. That the chairman recommend to Mr. Speaker that the per diem sum to be paid to professional and/or expert witnesses from outside the Public Service, duly summoned before the committee, be set at \$50.00, plus living and travelling expenses.
8. That the chairman advise the members at each meeting of correspondence received pertaining to the Columbia River Treaty, and that such correspondence be available in the clerk's office for reference by committee members.
9. That the suggestion that the committee hold hearings in British Columbia be deferred for consideration at a later date.

On motion of Mr. Herridge, seconded by Mr. Davis,

Resolved,—That the committee consider the report item by item.

The members then proceeded to consideration of individual recommendations in the report.

It was agreed that item 4(f) be amended to read "other witnesses".

In connection with recommendation No. 8 pertaining to correspondence, it was agreed that if the volume of correspondence became unwieldy, it could be listed in the minutes rather than being read by the Chairman.

On conclusion of the item by item consideration of the report, on motion of Mr. Davis, seconded by Mr. Stewart,

Resolved,—That the first report of the subcommittee on agenda and procedure be approved, as amended.

The chairman advised that correspondence pertaining to the Columbia River Treaty has been received from the following:

International Woodworkers of America, Local 1-367, Haney, B.C.; Mr. A. Archibald, Castlegar, B.C.; Miss Bertha Ruddock, Toronto, Ont.; Mrs. E. Ross, Calgary, Alta.; L. Austin Wright, D.Eng., Sidney, B.C.; United Electrical, Radio and Machine Workers of America, District 5 Council, Toronto, Ont.; J. Takach, Vancouver, B.C.; Columbia River for Canada Committee, Vancouver, B.C.

At 10.30 a.m., on motion of Mr. Fairweather, the committee adjourned until Tuesday, April 7th at 10.00 a.m.

Dorothy F. Ballantine,
Clerk of the Committee.

DELIBERATIONS

WEDNESDAY, March 25, 1964

The CHAIRMAN: May I call the meeting to order. I see a quorum. Gentlemen, the first item of business is to announce the composition of our subcommittee on agenda and procedure. The members are Messrs. Nesbitt, Fleming (*Okanagan-Revelstoke*), Herridge, Patterson, Plourde, Turner, and your chairman.

A meeting was held yesterday afternoon at which all groups were represented and actually, only one member of the steering committee was absent through prior commitments. We have a report of the subcommittee on agenda and procedure which, with leave of the committee, I would like to read. It is fairly detailed, but perhaps you would permit me to read it in its entirety and, then, if you like, we could accept it in toto, or discuss it and consider it paragraph by paragraph. The report reads as follows:

Your subcommittee on agenda and procedure met on Tuesday, March 24th, and agreed to recommend as follows:

1. That, pursuant to its order of reference of March 19th, 1964, the committee print 2,000 copies in English and 500 copies in French of the Minutes of Proceedings and Evidence pertaining to the Columbia river treaty.
2. That the committee meet on Tuesday, April 7th and Thursday, April 9th at 10.00 a.m., and on Friday, April 10th at 9.00 a.m.; and that decision be made later regarding the dates of further meetings.
3. That the Secretary of State for External Affairs be invited to appear before the committee on Tuesday, April 7th, to submit to the committee the principal considerations underlying the treaty.
4. That following the presentation of the Secretary of State for External Affairs, witnesses will be heard in the following order:
 - (a) Federal government experts in their fields;
 - (b) British Columbia government representatives;
 - (c) General A. G. L. McNaughton;
 - (d) Leading engineering firms which have made studies relevant to the question;
 - (e) Expert witnesses on specific points;
 - (f) Local points of view.
5. That all witnesses, other than federal and provincial ministers and their advisers, (except when they are submitting written material), be required to submit fifty (50) copies of their brief to the committee clerk one week in advance of their appearance.
6. That, unless the witness has indicated to the contrary, the clerk, when distributing such briefs to the members, will append an instruction stating that the briefs are not to be disclosed to the press or any other media of communication until presented to the committee.

7. That the chairman recommend to Mr. Speaker that the per diem sum to be paid to professional and/or expert witnesses from outside the Public Service, duly summoned before the committee, be set at \$50.00, plus living and travelling expenses.
8. That the chairman advise the members at each meeting of correspondence received pertaining to the Columbia river treaty, and that such correspondence be available in the clerk's office for reference by committee members.
9. That the suggestion that the committee hold hearings in British Columbia be deferred for consideration at a later date.

Now, what is your pleasure with respect to consideration of the first report of the subcommittee on agenda and procedure?

Mr. HERRIDGE: I suggest, owing to their length, that it would be wise to take up the paragraphs one at a time, because it is very hard to remember all these details.

The CHAIRMAN: Would you so move?

Mr. HERRIDGE: I would make the suggestion which I think is generally acceptable.

Mr. DAVIS: I second the motion.

The CHAIRMAN: It has been moved by Mr. Herridge and seconded by Mr. Davis. All those in favour?

Motion agreed to.

Then, the first recommendation was that "pursuant to its order of reference of March 19th, 1964, the committee print 2,000 copies in English and 500 copies in French of the minutes of proceedings and evidence pertaining to the Columbia river treaty".

Agreed.

Now, item 2:

That the committee meet on Tuesday, April 7th and Thursday, April 9th at 10.00 a.m., and on Friday, April 10th at 9.00 a.m.; and that decision be made later regarding the dates of further meetings.

Agreed.

Mr. PATTERSON: Was the adjournment not supposed to be in there?

The CHAIRMAN: Mr. Patterson raises a point which was certainly mentioned in the steering committee. My recollection is that it was anticipated that on both Tuesday and Thursday we would be in a position to sit from 10.00 a.m. until perhaps 12.30 p.m. but that on Friday because of the house sitting of the day, we would probably be limited to a shorter sitting period, perhaps to eleven o'clock. But it was not spelled out in the recommendation. Is the second recommendation with respect to the first three meetings, Tuesday, April 7th, Thursday, April 9th, and Friday, April 10th acceptable?

Agreed.

Item No. 3:

That the Secretary of State for External Affairs be invited to appear before the committee on Tuesday, April 7th, to submit to the committee the principal considerations underlying the treaty.

Agreed.

Item No. 4:

That following the presentation of the Secretary of State for External Affairs, witnesses will be heard in the following order:

- (a) Federal government experts in their fields;
- (b) British Columbia government representatives;
- (c) General A.G.L. McNaughton;
- (d) Leading engineering firms which have made studies relevant to the question;
- (e) Expert witnesses on specific points;
- (f) Local points of view.

Mr. HERRIDGE: I wonder about that word "local"; surely there would be much more than local points of view. I suggest that there would be regional, national, or other points of view.

The CHAIRMAN: It would be helpful if anybody contributing would allow me and the reporters to acknowledge the particular speaker so that his name might appear on the record. Was there anything you wanted to have noted, Mr. Herridge?

Mr. HERRIDGE: It was just the use of the word "local". How would it be to make it read "other points of view"?

The CHAIRMAN: Would you be agreeable to the wording "other points of view"?

Mr. HERRIDGE: Yes, or other witnesses. That would cover it.

The CHAIRMAN: Other witnesses?

Mr. HERRIDGE: I think that would cover everything.

The CHAIRMAN: Is that acceptable?

Mr. HERRIDGE: Or "other organizations".

The CHAIRMAN: "Other organizations and witnesses"; is that acceptable? All right.

Mr. BYRNE: I think that is pretty broad. Is the committee going to hear just any one?

Mr. TURNER: Tom, Dick, and Harry?

Mr. BYRNE: I suggest that local points of view might constitute a pretty broad term. Mr. Herridge wants to make it national. Is this committee going to hear anyone who wishes to make representations? This is pretty broad.

Mr. PENNELL: "Other witnesses approved by the committee"; how about that?

Mr. MACDONALD: No, I do not think we need committee approval. I think it should just be "other points of view".

Mr. HERRIDGE: Mr. Byrne is trying to make it more restrictive, contrary to what the Secretary of State for External Affairs said in the house—"anyone having anything to contribute".

The CHAIRMAN: I do not think that paragraph No. 4 limits or restricts in any way the list of witnesses, but simply sets out the order, as it says "that following the presentation of the Secretary of State for External Affairs, the witnesses will be heard in the following order", so I think it is a clause which is really more relevant to sequence.

Mr. HERRIDGE: That is right, quite right.

The CHAIRMAN: Now, what was your suggestion?

Mr. HERRIDGE: That we make it "other witnesses and other points of view".

Mr. LEBOE: I think Mr. Byrne has a point. I think the steering committee must have been thinking about local points of view. If you are dealing with facts, that is one thing; but we are talking about points of view. I do not think we should be confronted with witnesses who have points of view but no real interest in this problem which is before us; this could happen. I think Mr. Byrne's point is well taken. I believe we should consider when we are speaking about local points of view that it is in an endeavour to give those who are fairly interested in this thing an opportunity to appear and express their points of view. If we are dealing with facts, that is one thing; but we are talking about points of view.

The CHAIRMAN: Thank you, Mr. Leboe. Is there any other contribution?

Mr. FAIRWEATHER: Is "local" not a good word? There are points of view in New Brunswick concerning this, but they certainly are not local.

Mr. CHATTERTON: Will the per diem allowance, to which you have referred, be applicable only to those who have been invited by the committee?

The CHAIRMAN: We will be dealing with that clause in due course. The wording is "witnesses duly summoned before the committee".

Mr. TURNER: Mr. Chairman, might we get back to the point under consideration? We are talking about sequence. The witnesses will have to be invited in due course by the committee. Might we settle the matter in respect of other witnesses?

The CHAIRMAN: Would the words "other witnesses" be acceptable?
Agreed.

Mr. DAVIS: Mr. Chairman, there is the matter of giving sufficient notice to these witnesses before they appear. I assume that the chairman will be in contact, for example, with the representatives of the government of British Columbia. Will this be happening in the next day or two so that they will be ready and available?

The CHAIRMAN: Mr. Davis, immediately this meeting is concluded the deliberations of this meeting should be furnished to all interested parties. I certainly would be grateful if the members of the press would be of assistance to us, so that anyone who is interested in this matter will be aware of what we have decided here today. This is a rather important meeting.

Mr. HERRIDGE: I think that is a very good suggestion. I hope the gentlemen of the press will give a good report of this meeting so that everyone in Canada will know the procedure which has been adopted today.

Mr. CHATTERTON: There should be formal notification by the chairman to the British Columbia government.

The CHAIRMAN: Thank you. I will see that that is done.

Mr. DAVIS: In view of the fact that each person has to have his submission in seven days in advance, the notice should go out to the first half dozen names in the sequence quite early.

The CHAIRMAN: Gentlemen, may we proceed to paragraph 5:

That all witnesses, other than federal and provincial ministers and their advisers, (except when they are submitting written material), be required to submit fifty (50) copies of their brief to the committee clerk one week in advance of their appearance.

Mr. RYAN: That does not give much time for the first witness.

The CHAIRMAN: The requirement is in respect of witnesses other than federal and provincial ministers and their advisers (except when they are submitting written material). Is that agreeable?

Mr. DAVIS: I do not quite follow the part in parenthesis.

The CHAIRMAN: May I read this; you might even write it down, because it is an important paragraph:

That all witnesses, other than federal and provincial ministers and their advisers, (except when they are submitting written material), be required to submit fifty (50) copies of their brief to the committee clerk one week in advance of their appearance.

I read this a few moments ago for the first time, and my reading of this clause would suggest that this limitation of 50 copies of the brief is in respect of all witnesses other than federal and provincial ministers and their advisers.

Mr. HERRIDGE: Mr. Chairman, I would like to add to that "and General McNaughton". We could not expect him to provide 50 copies of his brief and submit it to us in advance.

An hon. MEMBER: Why not?

Mr. BREWIN: May I inquire what the committee contemplates would happen if the witnesses failed to present their written briefs in time?

Mr. DAVIS: We would get another witness.

Mr. MACDONALD: I might point out that this is for the convenience of the members of the committee. Many members of the committee felt, because of past experience, that quite often when a brief is handed out at a meeting and read, members did not have an opportunity in advance to prepare themselves and that they should have an opportunity of reading these briefs in advance. I would think that if a witness failed to present his brief in time, he would have to be shifted to another time. I think it is important the information should be in the hands of the members in order to give them an opportunity to deal with the merits contained therein. I think this will be a great time-saving measure. In respect of General McNaughton, my view is that his statements on this range back over a ten year period and at times have been so disparate that it would be well for him to put them in writing.

Mr. HERRIDGE: Naturally, General McNaughton being such a highly technical witness, will have quite a considerable brief. However, in view of General McNaughton's past service and position, I feel he comes in the same category as representatives of governments. I do not believe he should be required to submit 50 copies of his brief.

Mr. BREWIN: I would move that the copies be supplied at the expense of the government in respect of General McNaughton's brief.

Mr. FLEMING (*Okanagan-Revelstoke*): I can think of many other witnesses to whom the same exemption might be applied. The committee should consider very carefully whether or not it is going to provide exemption.

Mr. TURNER: To echo what Donald Macdonald said, I feel the committee wished to have the written brief before they were presented so that we would have an opportunity to read them, summarize and examine them. The words in brackets cover the requirement that if provincial representatives choose to present a brief, they also would have to submit the brief one week in advance. However, if the provincial representative did not choose to present a brief, it would not apply. I think it is fairly clear.

Mr. CHATTERTON: I think it should be clear that General McNaughton should not have to go down to the printing office and pay to have 50 copies made. The government should do that. I think we should have copies of the brief but that the government should pay for them.

Mr. GROOS: How would the members accept the suggestion since this is the consideration in respect of General McNaughton, that he be required to supply to us at least one week in advance one copy and then we can arrange to have the additional copies printed.

Mr. TURNER: Yes, and the chairman could undertake then to have the necessary copies made.

Mr. STEWART: As I understand the situation, we are going to ask some witnesses to appear before this committee and in those cases we are going to pay their per diem expenses. In view of this it would seem to me in the case of the briefs that we are inviting these people to present, we should pay the expenses incurred in respect of the production of the copies. It would seem to me, if we are inviting these people to appear before us, it would be only reasonable that we proceed in this way and that they should have the expense of producing their briefs included under this particular item.

The CHAIRMAN: Is that a motion, Mr. Stewart?

Mr. RYAN: Am I to understand that this pertains to only invited witnesses?

Mr. STEWART: Yes, for invited witnesses only.

Mr. FAIRWEATHER: I will second that motion, Mr. Chairman.

Mr. BREWIN: Are we dealing only with the amendment at the present time?

Mr. DEACHMAN: Mr. Chairman, this amendment or suggestion is not precisely pertinent to only paragraph 5; later on we will be discussing the question of expenses and, perhaps at that time, we can deal with it further.

Mr. TURNER: Mr. Chairman, may I suggest an amendment that might meet the suggestion of Dr. Stewart and Mr. Fairweather, namely that the witnesses be required to submit a brief to the chairman, say ten days in advance and that the chairman have 50 copies printed for distribution.

Mr. HERRIDGE: That will clear the whole matter up pretty well.

Mr. TURNER: Would that meet with Mr. Stewart's suggestion?

Mr. HERRIDGE: I second the motion.

Mr. RYAN: Am I to understand this applies to only those witnesses who are invited?

Mr. TURNER: Yes.

The CHAIRMAN: It has been moved by Mr. Turner and seconded by Mr. Herridge; are you ready for the question?

Mr. RYAN: But, this is limited to only invited witnesses.

Mr. DINSDALE: Mr. Chairman, if this is to apply to all invited witnesses it is quite possible a witness might bring in a lengthy brief consisting of many many pages and, therefore, involving considerable expense, and I would presume, in view of what has been said, that the expenses related to the production of these would be all inclusive regardless of the size of the brief. This is my understanding of the amendment proposed.

Mr. LEBOE: It will be only a drop in the bucket.

Mr. DAVIS: I do not see how you can limit it.

The CHAIRMAN: There is one point which our clerk has pointed out to me just now; this procedure may impose an intolerable burden on the facilities of the house.

Mr. FAIRWEATHER: We can shop this work out.

Mr. TURNER: Surely there is a Xerox machine somewhere in the city of Ottawa.

The CHAIRMAN: Gentlemen, you have heard the motion; is there any further discussion?

Mr. CHATTERTON: Mr. Chairman, I want it made clear that this applies only to invited witnesses.

Mr. GROOS: Yes, that is the case.

The CHAIRMAN: The wording of paragraph 5 states that all witnesses other than federal and provincial ministers and their advisers be required to submit 50 copies of their briefs to the committee clerk.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, that is not inconsistent with what we have in mind at this time. You are referring now to a selected class of witnesses for whom we are going to assume the responsibility. It should be the understanding that those who come on their own will have to provide the briefs out of their own pocket.

The CHAIRMAN: Am I correct in my understanding that Mr. Turner's suggestion is limited to summoned witnesses?

Mr. TURNER: Yes.

The CHAIRMAN: That is the situation?

Mr. HERRIDGE: Yes, Mr. Chairman. I agree to that.

Mr. BREWIN: Mr. Chairman, are we dealing with the amendment now or the clause as a whole?

The CHAIRMAN: I presume at the moment we are dealing with a motion prior to the consideration of the clause as a whole, and this should have a relevant bearing.

Mr. BREWIN: I would like to say something on the clause as a whole when we arrive at that point, Mr. Chairman.

The CHAIRMAN: Is there any objection to this motion being dealt with at this time and then we can revert to paragraph 5 as a whole?

Some hon. MEMBERS: Agreed.

The CHAIRMAN: Are you ready for the question. All those in favour?

Mr. DINSDALE: If I may interrupt, Mr. Chairman, before we vote on the amendment I would like to say that this will be establishing a precedent, at least from the experience I have gained sitting in committees. This is the first time I have ever seen a committee volunteer to supply copies of briefs to be presented from all sources. I think you should keep that in mind.

Mr. BYRNE: This is not the first time we have asked for briefs in advance.

Mr. DINSDALE: But you will be establishing a precedent that may apply to all future cases of this kind.

Mr. GROOS: But it does not pertain to all sources.

Mr. STEWART: Mr. Chairman, I believe there is some misunderstanding which may be on my part or that of others.

As I understand the situation, only those witnesses who are specifically requested to be here for the purpose of helping this committee would be facilitated in their presentation in this way. In my opinion, if we are going to ask these people to come here, surely it is our duty to assist them in making their presentations.

I do appreciate the point made by Mr. Dinsdale when he says this may involve a considerable expense but it seems to me that if we are going to the extent of having them come here to Ottawa we are going to have to accept the other expenses which are entailed.

Mr. DINSDALE: My only point, Mr. Chairman, is that this would be establishing a precedent.

Mr. DEACHMAN: Mr. Chairman, it seems to me that we as a committee are not so much interested in the witnesses producing 50 copies; what we are interested in is that the chairman make available for the members of this committee 50 copies of the briefs. I think our suggestion should be that the chairman of the committee undertake to produce 50 copies and it then would be left to the chairman how he accomplishes this. If a witness was in a position

to have 50 copies available, so much the better. Naturally, if an engineering firm prepared 50 copies there would be no need for us to be concerned. However, if a case comes up where a witness finds difficulty in preparing 50 copies we could ask that a copy of the brief be forwarded here from which we could make the additional copies. If this were the case we would not have to make resolutions in this committee on such a broad scale, and the chairman would be charged with this duty.

Mr. GROOS: I wonder how dangerous this precedent is when we consider that the 50 copies are available for the use of members of this committee. No doubt, a few would be required for file and other purposes.

I have served as a member on the defence committee and, in that case, the chairman had 50 copies of what was said prepared. In my opinion, there does not seem to be any added expense involved in this case.

The CHAIRMAN: Gentlemen, are there any other comments?

Mr. HERRIDGE: Mr. Chairman, I think it has been made quite clear that this concerns only those witnesses who are particularly requested to appear before the committee. There will be organizations and others who are invited in general terms, according to the attitude of the Secretary of State for External Affairs and the government. That is, there will be those who are specially or particularly invited to appear, and then there will be the over-all invitation to those who have anything to contribute to the committee's knowledge.

Mr. BYRNE: Then, what is the motion?

The CHAIRMAN: The motion was made by Mr. Turner and seconded by Mr. Herridge.

I would ask the clerk to read the motion.

The CLERK OF THE COMMITTEE: The motion reads:

That summoned witnesses be required to submit a brief to the chairman ten days in advance and the chairman arrange to have 50 copies made for distribution to the members.

Mr. TURNER: That could be just added to the existing paragraph so that it would read that other witnesses would provide 50 copies but the summoned witnesses would present only one copy ten days in advance and then the chairman would take care of the distribution.

The CHAIRMAN: All those in favour?

Motion agreed to.

The CHAIRMAN: Gentlemen, may we now revert to paragraph 5, namely that all witnesses other than federal and provincial ministers and their advisers, (except when they are submitting written material), be required to submit (50) copies of their brief to the committee clerk one week in advance of their appearance.

Mr. DAVIS: Mr. Chairman, could you explain again what is contained in the bracket: "except when they are submitting written material?" Presumably "they" refers to the federal and provincial ministers and their advisers.

The CHAIRMAN: I am informed that the bracket in this sentence simply is to take care of the situation where certain federal and provincial ministers in fact will be submitting written material.

Mr. BYRNE: The witnesses may have advisers with them who had something to do with the preparation of the material and may question those individuals without the necessity of presenting additional briefs.

Mr. DAVIS: I am sure the provincial and federal people will have had sufficient time to prepare 50 copies in advance.

Mr. FLEMING (*Okanagan-Revelstoke*): Mr. Chairman, perhaps I could just say a word in clarification. As I recall our conversations of yesterday, the purpose of this rule was to take care of the contingency that some may present written material to the committee while others may only wish to respond to questioning but may from time to time during the presentation call on their advisers for clarification. In some cases their clarification may be prepared in the form of a written statement while in other cases the clarification may take the form of extemporaneous answers to questions. Consequently we were not trying to tie the witnesses' hands to the extent that each time they open their mouths they will have to send 50 written copies of the points of clarification.

Mr. BREWIN: Mr. Chairman, that explanation is along the lines of what I had in mind. I do not think an amendment is necessary. It appears to me that we all feel that it is a desirable objective to have this written material provided in advance, but I hope this will not be regarded as a rigid rule. There may be some individuals who, through no fault of their own, do not have filed 50 copies of their presentation. Perhaps a witness is available and we desire to call that witness in a hurry in which case he will not have 50 copies of his presentation available. I hope we consider this suggestion as a general direction rather than a rigid rule.

The CHAIRMAN: Mr. Brewin, the steering committee met yesterday and discussed this subject for some time. It was felt that it was desirable to lay down certain general ground rules which it hoped would have the effect first of all of permitting every member of this committee to do his work very seriously in advance, and, secondly, that the time of the committee would not be consumed by the simple reading of briefs as perhaps occurred, without discredit to anyone, during hearings of the defence committee which sat on several occasions for an hour or an hour and a half listening to a brief being read which the members had not had the opportunity of examining in advance. This suggestion was put forward in order that all members would be in a position to familiarize themselves with that which the witness had to say so that when the witness came before the committee he could in a very short period of time, perhaps 15 minutes to one half hour, summarize his submission and then make himself available for questioning in respect of the views he had put before the committee.

If I have not expressed that which was in the minds of the members of the steering committee I hope you will be helpful now in adding to what I have said.

Mr. HERRIDGE: Mr. Chairman, I think your estimate of 15 minutes is a bit modest. It seems to me that it was understood that in many cases when the committee members had a brief in advance it would not be necessary to read the brief at all and the witness could refer to it page by page with explanations, answering questions of the committee members as they considered the brief. I presume that procedure would apply to presentations by ministers as well. I presume the ministers will provide written submissions in this connection. I think this whole question must be left to the good judgment of this committee as we proceed.

Mr. BREWIN: Mr. Chairman, I should like to make sure that the wording of this resolution as it stands means that all witnesses are required to adhere to it because it is very imperative in its terms. Some member of this committee might well state that in view of the fact the witness did not adhere he should not be heard. All I wish to have is your assurance, Mr. Chairman, that this suggestion is not intended to be a rigid rule but merely a guide line and if we want to change it later when it becomes necessary to do so we are at liberty to change it.

Mr. MACDONALD: Mr. Chairman, I feel that the suggestion as it is worded is in actuality a rigid rule. Of course, this committee has the power to change it at any time or make exceptions in particular cases. I feel that unless we state that it is a rigid rule for all witnesses it will not be effective. I think every witness should be faced with the necessity of setting down his thoughts in advance for distribution to committee members.

Mr. PATTERSON: Mr. Chairman, I had the same thought as that expressed by Mr. Macdonald. I do not think there is any point in setting down rules if they are not going to be recognized as rules. I feel that when we state witnesses should do certain things then they should be required to do them, otherwise we might just as well throw the rules out of the window. If we make an exception in one case we may have to make the same exception in other cases. On the other hand, if at a later date the members of this committee feel that they should make a change in the rules that would be permissible. Let us proceed on the basis that a rule is a rule and must be adhered to.

Mr. BYRNE: Yes, as is the case in the House of Commons itself.

Mr. HERRIDGE: Mr. Chairman, I support the point of view expressed by Mr. Brewin. I think we should just use common sense in this regard. We might well find ourselves summoning someone before this committee under circumstances which make it impractical to provide 50 copies in advance. I feel we should consider this suggestion as a guide line to be followed generally by witnesses appearing before this committee.

Mr. BYRNE: Mr. Chairman, we are masters of our own procedure.

Mr. LEOBE: Mr. Chairman, I think we should stick to the rules and, as Mr. Byrne has pointed out, we are masters of our own procedure and may make exceptions to these rules when we find it necessary. Perhaps when witnesses express a desire to appear before the committee at some date later than originally scheduled, in order to provide the 50 copies of the presentation in advance, I see no reason why they should not be granted this privilege. Unless this committee desires to yield at this particular time in respect of these rules, I feel the committee can make exceptions to the rules because of unusual circumstances when it is deemed necessary and practical. I feel the rule should stand as it is, otherwise we will not accomplish anything in this direction at all but will be defeating the purpose.

Mr. DAVIS: Mr. Chairman, we may make many exceptions to these rules but I do not see the necessity of making these exceptions now.

Mr. LEOBE: I agree exactly with that sentiment.

The CHAIRMAN: Are you ready for the question? All those in favour of paragraph 5 in its present form please raise your hands? All those opposed to paragraph 5 in its present form raise your hands?

I declare the motion carried unanimously.

We will now consider paragraph 6:

That unless a witness has indicated to the contrary the clerk when distributing such briefs to the members will append an instruction stating that briefs are not to be disclosed to the press or any other media of communication until presented to the committee.

Mr. BYRNE: Question.

The CHAIRMAN: Are you ready for the question? All those in favour raise your hands? All those opposed raise your hands?

I declare the motion carried unanimously.

We will now consider paragraph 7:

That the chairman recommend to Mr. Speaker that the per diem sum to be paid to professional and/or expert witnesses from outside the public service duly summoned before the committee be set out at \$50, plus living and travelling expenss.

Mr. GROOS: Mr. Chairman, what does the word "summoned" mean? Are we limiting this paragraph to only those witnesses who have been invited to attend, or also to those witnesses attending as a result of their own request?

Mr. MACDONALD: Our intention was that expenses be paid only to those individuals the committee may decide to invite as opposed to those witnesses who come forward on their own initiative.

The CHAIRMAN: I think Mr. Groos in making the point that the word "summoned" may have some certain legal connotation.

Mr. MACDONALD: Perhaps we could refer this question to the clerk, Mr. Chairman. I think this term has been used in the past.

Mr. BYRNE: Mr. Chairman, there seems to be some misunderstanding in regard to paragraph 6. Certainly I am of a different opinion from Mr. Brewin regarding the intent of that paragraph.

The CHAIRMAN: Gentlemen, may we revert to paragraph 6?

Some hon. MEMBERS: Agreed.

Mr. BYRNE: Mr. Chairman, I would ask that we revert to a reconsideration of this paragraph. Do we understand the wording of that paragraph to mean that only those witnesses who ask that their briefs be kept confidential be accorded this privilege, or are we to understand that all briefs are to remain confidential until they have been presented to this committee unless otherwise requested by the witness?

Mr. BREWIN: Would you mind repeating the paragraph?

The CHAIRMAN: The wording of this paragraph is:

That unless a witness has indicated to the contrary the clerk when distributing such briefs to the members will append an instruction stating that the briefs are not to be disclosed to the press or any other media of communication until presented to the committee.

It would appear that the intention is to extend this privilege to all witnesses.

Mr. BYRNE: The decision is left to the witnesses in regard to the treatment of the briefs?

The CHAIRMAN: I think that is accurate.

May we now return to our consideration of paragraph 7, the provision for paying a per diem rate of \$50. plus living and travelling expenses to professional and expert witnesses duly summoned before the committee.

Mr. RYAN: Mr. Chairman, what is the summoning procedure? I do not think the word "summoned" can carry its legal connotation in this respect.

Mr. TURNER: Mr. Chairman, I wonder if I might ask the clerk, through you, whether the word "summon" in parliamentary terminology is the same as "invite".

The CHAIRMAN: Mr. Ryan, would it be acceptable to you if this word "summon" were changed to the word "invite"?

Mr. RYAN: I would much prefer it.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I would object to that. Correct me if I am wrong, but I would think that a committee of parliament

has the right to summon any citizen to appear before it, and that witnesses whom we wish to hear can be subjected to that summons. If you invite somebody, he can say, "No, thank you, I do not choose to come".

Mr. TURNER: Speaking to that point, without infringing on parliament's rights, I think the intent of the paragraph is to allow the refunding of expenses to anybody required or invited to come at the instance of this committee. Perhaps, to maintain the parliamentary prerogative, and yet to make it clear that we are not issuing subpoenas, we could add the words "or invited" so that it would read "summoned or invited".

Mr. GROOS: I just wanted to cover the situation where a person asks if he may appear before the committee or one who really appears at his own invitation. Would we be paying his way?

Mr. FLEMING (*Okanagan-Revelstoke*): In that case we are not either summoning or inviting, we are permitting.

Mr. MCEWAN: Mr. Chairman, what is the wording of the committee's terms of reference concerning the sending of papers; does it say "summons"?

The CHAIRMAN: Gentlemen, I wonder if I could read you the following terms of reference in regard to the word "ordered". For our purposes this is the definition of the word "ordered":

That the said committee be empowered to examine and inquire into all such matters and things as may be referred to it by the house; and to report from time to time its observations and opinions thereon with power to send for persons, papers and records.

I should like to refer you to standing order 69, paragraph 1 in the 1962 edition.

Mr. MACDONALD: I would suggest that unless we follow the procedure set out in standing order 69, we do not have any authority to pay the per diem expenses or other costs of a witness. In subparagraphs 1 and 2 the term used is specifically to summon.

The CHAIRMAN: Is it agreed that the wording of the steering committee "duly summoned before the committee" is acceptable in its present form? All those in favour? Anyone opposed?

Agreed.

Paragraph 8 reads:

That the chairman advise the members at each meeting of correspondence received pertaining to the Columbia river treaty, and that such correspondence be available in the clerk's office for reference by committee members.

The clerk of the committee or the chairman of the committee has received correspondence from the following pertaining to the Columbia river treaty, and it is presently available for reference by members of the committee in the office of the clerk, room 495, west block: International Woodworkers of America, local 1-367, Haney, B.C.; Mr. A. Archibald, Castlegar, B.C.

Mr. HERRIDGE: A fine fellow.

The CHAIRMAN: Miss Bertha Ruddock, Toronto, Ontario; Mrs. E. Ross, Calgary, Alberta; L. Austin Wright, D.Eng., Sidney, B.C.

Mr. HERRIDGE: He is very well informed.

The CHAIRMAN: United Electrical, Radio and Machine Workers of America, district 5 council, Toronto, Ontario; J. Takach, Vancouver, B.C. and Columbia river for Canada committee, Vancouver, B.C.

Mr. HERRIDGE: A very active group.

The CHAIRMAN: To my knowledge that is all the correspondence received. Is the committee agreeable? Perhaps if it comes by the hundreds this could simply be included in our minutes rather than by reading in each case? It is agreed.

Agreed.

Paragraph 9 reads:

That the suggestion that the committee hold hearings in British Columbia be deferred for consideration at a later date.

I understand it is agreed.

Agreed.

May I have a motion from a member of this committee approving the first report of the sub-committee on agenda and procedure of the standing committee on external affairs as amended?

Mr. DAVIS: I so move.

The CHAIRMAN: It is seconded by Mr. Stewart.

Motion agreed to.

If there is no other business at this moment, and I think there is none because we are awaiting the Secretary of State for External Affairs, we are ready for a motion for adjournment. It is moved by Mr. Fairweather and seconded by Mr. Ryan that the committee adjourn.

Motion agreed to.

HOUSE OF COMMONS
Second Session—Twenty-Sixth Parliament
1964

STANDING COMMITTEE
ON
EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 2

TUESDAY, APRIL 7, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESS:

The Hon. Paul Martin, Secretary of State for External Affairs

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--------------------------------|----------------------------|----------------|
| Brewin, | Fleming (<i>Okanagan-</i> | MacEwan, |
| Byrne, | <i>Revelstoke</i>), | Macquarrie, |
| Cadieux (<i>Terrebonne</i>), | Forest, | Martineau, |
| Cameron (<i>Nanaimo-</i> | Gelber, | Patterson, |
| <i>Cowichan-The Islands</i>), | Groos, | Pennell, |
| Cashin, | Haidasz, | Plourde, |
| Casselman (Mrs), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Laprise, | Turner, |
| Dinsdale, | Leboe, | Willoughby—35. |
| Fairweather, | Macdonald, | |

(Quorum 10)

Dorothy F. Ballantine
Clerk of the Committee.

ORDER OF REFERENCE

TUESDAY, April 7, 1964.

Ordered,—That the name of Mr. Klein be substituted for that of Mr. Regan on the Standing Committee on External Affairs.

Attest.

LEON-J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

TUESDAY, April 7, 1964.

(3)

The Standing Committee on External Affairs met at 10.00 o'clock a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Byrne, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Cashin, Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Kindt, Laprise, Leboe, Macdonald, Matheson, Nesbitt, Patterson, Plourde, Pugh, Ryan, Turner, Willoughby—(26).

In attendance: The Honourable Paul Martin, Secretary of State for External Affairs; Mr. Gordon Robertson, Clerk of the Privy Council; Mr. A. E. Ritchie, Assistant Under-Secretary of State for External Affairs; and Mr. G. M. MacNabb, Water Resources Branch, Department of Northern Affairs and National Resources.

The Chairman presented the second report of the Subcommittee on Agenda and Procedure, dated April 6, 1964, as follows:

1. It is understood that the Hon. R. W. Bonner, Q.C., Attorney General of British Columbia, the Hon. R. G. Williston, Minister of Lands, Forests and Water Resources, and Dr. H. L. Keenleyside, Chairman of the B.C. Hydro and Power Authority, will be in Ottawa on April 13th, 14th and 15th, and have indicated their willingness to appear before the Committee on those dates. It is therefore recommended that the Chairman extend an invitation to these gentlemen to attend on the dates mentioned.
2. That the committee meet to hear the British Columbia government officials on Monday, April 13th at 4.00 p.m., on Tuesday, April 14th at 10.00 a.m., and on Wednesday, April 15th from 9.00 a.m. to 11.00 a.m.
3. That the committee resume hearing of Federal government officials on Thursday, April 16th at 10.00 a.m., and on Friday, April 17th from 9 to 11.00 a.m.
4. The government of Saskatchewan has requested that the committee receive a delegation from that province in May; it is therefore recommended that the Chairman extend an invitation to the Premier of Saskatchewan to send representatives.
5. That the government of Alberta be made aware of the fact that the committee would be prepared to receive a submission from them, if they wish to present one.
6. That the Chairman advise the Hon. Davie Fulton that the committee would be pleased to hear from him if he wishes to appear; and that if Mr. Fulton does wish to appear, he be invited to do so after the committee has heard General McNaughton.
7. That the following independent engineering firms be invited to attend to give evidence: Montreal Engineering Co. Ltd., Montreal; H. G. Acres & Co., Niagara Falls, Ont.; C.B.A. Engineering Co. Ltd., Vancouver; Casco Consultants Ltd., Vancouver.

8. That 100 copies of certain material submitted by General McNaughton for information of the committee be ordered to be printed.

On motion of Mr. Davis, seconded by Mr. Fleming (*Okanagan-Revelstoke*), the report was approved.

The Chairman announced that correspondence has been received from the following since the last meeting: Mr. Wm. Kashtan, Executive Secretary, Communist Party of Canada; Mr. F. Tomkinson, Vancouver; Mr. F. J. Bartholomew, Vancouver; Vancouver Board of Trade; Mrs. E. Wood, Secretary, Columbia River for Canada Committee; the Hon. W. S. Lloyd, Premier of Saskatchewan.

The Chairman welcomed the Secretary of State for External Affairs and invited him to make a statement.

The Minister then made a detailed and comprehensive statement outlining the principal considerations underlying the Columbia River Treaty Protocol.

During the course of his statement, the Minister tabled two documents entitled respectively "Correspondence between General A. G. L. McNaughton and the Department of External Affairs, 1963-64", and "Correspondence between Ministers of the Government of Canada and Premier W. S. Lloyd of Saskatchewan relating to Development of the Columbia River Basin in Canada".

On motion of Mr. Davis, seconded by Mr. Byrne,

Resolved,—That the two documents tabled by the Minister be printed as part of today's Proceedings. (*See Appendices A and B.*)

Later the Minister provided copies of a publication entitled "The Columbia River Treaty and Protocol: A Presentation" prepared by the Departments of External Affairs and Northern Affairs and National Resources, copies of which were distributed to the members.

The Minister's presentation continuing, Mr. Byrne moved, seconded by Mr. Fleming (*Okanagan-Revelstoke*), that the Committee adjourn now and reconvene at 4.00 o'clock this afternoon. *Carried.*

At 12.30 p.m., the Committee adjourned until 4 o'clock p.m., this day.

AFTERNOON SITTING

(4)

The Committee reconvened at 4.00 p.m., the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Byrne, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Cashin, Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Kindt, Klein, Laprise, Leboe, Macdonald, MacEwan, Matheson, Nesbitt, Patterson, Pennell, Pugh, Ryan, Stewart, Willoughby—(28).

In attendance: The same as at the morning sitting.

The Secretary of State for External Affairs resumed his presentation and was questioned.

At 5.45 p.m., on motion of Mr. Haidasz, the committee adjourned to 10.00 a.m., Thursday, April 9, 1964.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

TUESDAY, April 7, 1964.

The CHAIRMAN: I see a quorum. May I call the meeting to order. We are starting just a few minutes late today, but I hope hereafter we will be able to move ahead just as promptly as we can in the hours assigned.

First, I would like to present the second report of the subcommittee on agenda and procedure of the standing committee on external affairs: (*See Minutes of Proceedings.*)

May I have a motion from a member of the committee that this report be approved?

Moved by Mr. Davis, seconded by Mr. Fleming.

Mr. PUGH: Has Alberta made any representations that they be here?

The CHAIRMAN: My understanding is there has been no official communication from the province of Alberta.

It is however our intention to communicate with them.

Is the committee ready for the question?

Motion agreed to.

The CHAIRMAN: Now, gentlemen, the purpose of our meeting this morning is to hear the initial submission by the Secretary of State for External Affairs.

Prior to the submission by Mr. Martin, I might point out that it was agreed it would be desirable to indicate to the committee what correspondence has been received. I would like to report that correspondence has been received, since our last meeting, from the following: Mr. F. Tomkinson, Vancouver, B.C.; Mr. F. J. Bartholomew, electrical engineer, Vancouver, B.C.; The Vancouver board of trade; Mrs. E. Wood, secretary, Columbia river for Canada committee; the Hon. W. S. Lloyd, premier of Saskatchewan; Mr. Wm. Kashtan, executive secretary, Communist party of Canada.

I would like to call on the Hon. Paul Martin.

Hon. PAUL MARTIN (*Secretary of State for External Affairs*): Mr. Chairman and members of the committee, this is a very important meeting, and the subject is a very complicated one. I hope, in opening the submission for the government's contention in respect of the desirability of the treaty on the Columbia river project, the supporting protocol and the conditions of sale which are all supported by an agreement between Canada and British Columbia, that it will be possible for us to give you in the early stages of this committee—beginning with my evidence and later that of members of the federal and provincial service—the arguments in favour of the position that Canada under two successive governments has taken with regard to this matter.

The meetings of this standing committee on external affairs which are designed to examine the treaty and the protocol, bring a long history of study and negotiations to final review. I hope the government's presentation will give members of the committee the fullest possible information on which to base their judgments.

On March 3 and March 9 in the House of Commons I made a comprehensive statement. While I may traverse some of the points in that statement, it is not my intention by any means to cover the same ground.

In my judgment the treaty and protocol represent the best possible arrangement from Canada's point of view. I believe that this agreement—

this arrangement—will serve well the national interest. At the same time I think it is important to emphasize that it reflects the wishes of the province of British Columbia where the river is located. It is also far better for Canada than anything we could do on our own without United States co-operation. In fact, one engineering report after another has indicated that without co-operation with the United States, the economics of developing the Canadian stretch of the Columbia would be doubtful indeed. Whatever else may be said in these hearings, I hope that these basic facts will be kept in mind.

It has been said by some critics that this represents a sell-out. These are general words that are used often to hide any careful examination of what the treaty provides or what the protocol seeks to do. It is no more accurate to say this is a sell-out than it would be to say that the United States sold out to Canada as a result of the arrangement that has been made for building the Libby dam, from which Canada will derive such benefits. If there was a sell-out by Canada in respect of the sale of the downstream benefits, then certainly there was a sell-out by the United States to Canada in respect of Libby. But, of course, the real fact is that this is not the way to look at this proposition because this is a co-operative arrangement. I think the evidence will show clearly it would not be correct to make the interpretation, either in respect of the sale of the downstream benefits by Canada or the advantages accruing to Canada by the establishment of Libby, that these constitute a sell-out.

Even before the negotiation of the improvements in the protocol and the related arrangements, the then prime minister of Canada stated in his press release of January 17, 1961, and I will quote:

The treaty that is being signed today is without precedent in relations between nations. It represents a new level of co-operation for mutual advantage. Without the proposed agreement neither country could secure benefits for its people equal to those that can be realized through the action that the treaty contemplates. The treaty is, I believe, fair and equitable to both parties. Its implementation will be a splendid example of co-operation between neighbours. It will also through the great investment involved and by reason of the low cost power it provides serve as a most important stimulus to the Canadian economy.

Then the next day in parliament he said:

This treaty represents a major advance in co-operation by the two nations without sacrifice of the rights, the sovereignty or otherwise of either country, and is indeed a landmark in responsible joint action by nations for their economic betterment.

As the negotiator for Canada since the last parliament in this matter I must say that I support strongly these two statements made by the prime minister of Canada in 1961.

Now, shortly put, I believe that one of the assignments of this committee will be to ask this one simple question: Is this treaty good for Canada? In answering this question, two important areas for inquiry appear. The first is: What would we have if we attempted to proceed entirely by ourselves to develop the mighty Columbia river, which is the river of the greatest single source of power in the world? The second area for analysis is: What do we get from this particular treaty?

In a very summary way at this point, I would like to comment on the two areas I have just mentioned.

The idea of an entirely separate "all-Canadian" development undoubtedly has an emotional appeal, but it would be lacking in economic and technical justification. Witnesses, both governmental and those outside the service, who have the technical skill will support this statement. The 1957 report of the

Montreal Engineering Company which was referred to in the February white paper estimated the cost of power from a fully developed independent program at 7.1 mills per kilowatt hour, with the initial portion costing 12.9 mills per kilowatt hour.

I would remind the committee they have had placed already in their hands the documentation contained in the white paper which I presented in parliament. This documentation is essential for the fullest understanding of the case which is now being developed as you begin your committee sittings.

You will have the report of the Montreal Engineering Company, which is not the only report they produced. I am sure you will be very interested in the course of this evidence in having a report which has been prepared by this independent organization of great technical skill since the notes were exchanged between Mr. Rusk and me on January 22.

The 1957 report of the Montreal Engineering Company concludes, and I quote:

Hydro electric development of the Canadian Columbia river for integrated operation with United States plants would provide the cheapest source of power for British Columbia for many years to come if a satisfactory agreement for sharing of benefits can be reached. Otherwise, steam would provide the cheapest power.

The 1959 Crippen Wright engineering report, which will be placed in your hands later and which was referred to in the white paper, stated, and I quote:

The best initial project available to British Columbia on the upper Columbia river on the basis of independent planning is the low Mica development which would cost \$278 million in one construction phase and deliver power to load centres at a cost of 7.06 mills per kilowatt hour. Development of power on the Columbia would not necessarily be competitive or at all attractive on this basis.

The Fraser diversion possibility, about which you may be hearing something during the course of your committee hearings and which certainly has received a good deal of attention in the past, may receive less attention now because of the report recently tabled by the Minister of Northern Affairs in parliament. With respect to this Fraser diversion, as indicated at page 167 of the February white paper, the British Columbia Engineering Company study of 1956 found that, even without allowing for the cost of the necessary dams on the Columbia, the power produced under this arrangement would cost 7.10 mills per kilowatt hour at Vancouver.

Power at such costs is far more expensive than that made possible by a co-operative development with the United States.

Very simply and starkly the choice facing Canada is whether we shall let the energies of this great river continue to go to waste or whether, at long last, we shall put this mighty natural force to work for the benefit of the country.

If we were not to ratify these agreements—and ratification is proposed for October 1 of this year—the waters of the Columbia, propelled by nature, would continue to flow out to sea producing substantial quantities of power in the United States but virtually none in Canada and, of course, occasionally causing serious flooding in both countries. I will come back to this subject later in what I have to say.

This is surely not a future which any Canadian should wish to contemplate for this resource.

By helping to regulate the flow of this water we meet our own needs and receive great benefits from the use of such water as it passes through the United States.

The contrast between isolated Canadian development and co-operative development with the United States is, I think, brought out most clearly by the position of the Mica project which everyone seems to regard as a good development under any scheme. Everyone seems to agree with the Mica storage project at which there can be and will be the generating of power. This seems to be acceptable to all sides. As a result of the arrangements under the treaty, the at-site cost of power generated at Mica for Canadian use or disposal will be less than 1.5 mills per kilowatt hour for the first 30 years; whereas without the treaty, Mica generation during this period—if it could take place at all—would at best cost 4 mills per kilowatt hour, or between two and three times as much. I think it will be clear as you go through the evidence that if there were no co-operative development there would be no economic justification for the development of the Canadian section of the Columbia at all. (In each case something like one and a half mills more would, of course, be required to deliver such power to Vancouver. There would be 1.5 mills at-site and one and one half more mills added for the delivery for beneficial use of such power at Vancouver.) The savings—not the total benefits, but the savings compared with independent development—will amount to about \$16 million a year at Mica alone up to and including the year 2003.

I should like to repeat, before making a fundamental presentation to you, the advantages to Canada under the treaty, protocol and sales agreements as I see them.

Firstly, the equivalent by 1973 of \$501 million in payment from the United States, which will add some 319 million United States dollars to our exchange resources at an early date and which in total will more than cover in advance the costs of building the treaty storages.

Secondly, as a consequence, it will be possible to produce, in addition to the co-called "downstream benefits", a massive amount of low-cost power, as much as 20 billion kilowatt hours of energy per year at about 2 mills per kilowatt, for use by Canada in whatever way may seem best at the time.

Thirdly, in addition to the payments from the United States for downstream benefits during the first 30 years, to which I have already referred, there will be further downstream benefits subsequently which will continue to have a potential value to British Columbia of \$5 to \$10 million per year; moreover, additional payments of up to \$8 million may be made by the United States for extra flood control as well as special flood control compensation which may be called for in certain circumstances.

Fourthly, the Libby reservoir in the United States will make possible annual additional generation of more than 200,000 kilowatt years of low-cost energy in Canada which can be used in the continued industrial development of the Kootenays. The Duncan reservoir will add a further 50,000 kilowatt years per annum to this amount.

Fifthly, the installations in Canada and in the United States will help to prevent floods in settled areas on the Kootenay and Columbia rivers in Canada. I believe that not enough has been made of this by-product advantage. Those of us who remember the floods in British Columbia a few years ago will I am sure note the tremendous advantage of this arrangement.

Sixthly, even during the construction period, the treaty projects will provide a substantial amount of additional employment. I would like simply to digress here and say that I believe that this Columbia river project together with the development of the Peace river, about which there has been a lot of controversy, is going to be the means of ushering in a program of development and industrialization in the province of British Columbia that will have the greatest beneficial consequences for that section of the country and indirectly for Canada as a whole. Wherever there is a great development of electric power there follows inevitably a tremendous period of development. While

these projects are sometimes accompanied by misunderstanding and criticism, I believe that this one represents an imaginative undertaking that will take its place alongside the great projects in the east and in other parts of Canada. I believe that this particular project together with the Peace river project about which there has been a lot of criticism, will represent a tremendous development with the greatest consequences for British Columbia and for Canada. This will be seen in the immediate employment advantage of a peak labour force of about 3,000 men and an average of some 1,350 men who will be employed at the dams alone during the nine years of construction. Certainly the expenditures by this labour force will create many more jobs. The purchase of earth moving equipment, machinery, cement and other supplies from outside the project area will give important stimulus to production and employment in many parts of Canada. Following completion of the treaty projects there will be continuing construction and spending programs lasting for another ten to 15 years arising through the machining of the Mica dam and the construction of inevitable hydro projects downstream from the Mica dam.

Finally, this project will change a high cost power area, which B.C. has been, into one with an abundance of cheap power. Such power will improve the competitive position of that part of Canada compared with the neighbouring parts of the U.S. where power has always been cheap. It will thereby create many new permanent jobs and strengthen and diversify the economy.

Now, Mr. Chairman, I should like to table at this time for your scrutiny correspondence that I have had since I was charged with the responsibility of leading the negotiations last April; this correspondence with General McNaughton, began last summer; it includes some preliminary remarks by General McNaughton and an exchange of correspondence with him. I should also like to table correspondence between members of the former government, particularly Mr. Dinsdale, the then Minister of Northern Affairs and National Resources, and Premier Lloyd of Saskatchewan, together with correspondence between Premier Lloyd and myself which began last summer on the question of the right of diversion. Mr. Brewin I know will be interested in this subject and I hope he will find the correspondence as illuminating as I found delight in writing to the premier of Saskatchewan on what I think was a clear case.

Mr. BREWIN: You will hear from me later, Mr. Martin.

Mr. MARTIN (*Essex East*): I understand there are copies to be passed around.

Mr. TURNER: Mr. Chairman, does the committee wish to have this correspondence made part of the proceedings?

Mr. MARTIN (*Essex East*): I do not want to suggest what the committee should do but I think you will find the correspondence between General McNaughton and myself states pretty well the issue as both the general and I see it. The correspondence between Mr. Dinsdale and Premier Lloyd, and Premier Lloyd and myself, sets out the position of the federal government on the question of the right of diversion. It is up to the committee to decide, but I think it would be helpful.

Mr. DAVIS: I therefore think it should form part of the proceedings.

The CHAIRMAN: It is moved by Mr. Davis, seconded by Mr. Byrne that said correspondence should form part of the proceedings. All those in favour?

Motion agreed to.

Mr. MARTIN (*Essex East*): Mr. Chairman, I now come to the other phase of my presentation. I might say, speaking for the federal government, that we will be prepared—and this depends on the committee—in addition to my own appearance before this committee, to make available to you officials in the

office of the privy council, external affairs, northern affairs and justice, who have worked on this treaty for a long period and who have great technical knowledge. We will be glad to make these witnesses available. Of course there would be present, as there are here today, officials from the government of British Columbia who have worked over a long period on this matter. I have been advised by the government of British Columbia that there will be ministerial witnesses available to this committee, depending upon the decision that the committee takes. We are anxious to have a careful and objective analysis made of the treaty and of the protocol. Any evidence you wish and you feel has not been presented—and I hope you will not hesitate to ask for it—we would be glad to supply.

In addition to evidence given by officials directly, we will provide evidence from individuals outside the government who have technical competence.

Now, as part of the presentation which I wish to make to this committee, I am going to ask for the distribution at this time of a new document with which I propose to deal in some detail. This document could now be distributed. It contains our assessment of the factual situation; our analysis of the various proposals; our analysis of the benefits; a careful analysis of what the treaty and protocol provide, and what the sales agreement means; and the implications, of course, of the Canada-British Columbia agreements. I regret to say that the full text of this document in French has not been finally translated, but this will be forthcoming in a very few days. However, the appendix is ready in French.

I have given consideration to whether or not in my statement today I should make lengthy remarks incorporating all of this material, but after careful consideration I thought that the best thing would be to prepare this document carefully, more completely than it could be conveyed in a single statement, and make it readily available to members of the committee for reference. I do not propose to deal with every point made in the document, but I do propose to refer now in some detail to what I believe is the running story that deals with every phase of the argument involved. I call your attention to page 14. First of all, you will see that on page 11 there is a glossary of terms that are used throughout the commentary and throughout the treaty and protocol. This will give a better understanding of the meaning of some of these terms.

The purpose of this document, which is part of my statement, is to provide an analysis of the treaty, its achievements and its purposes. It seeks to indicate that the treaty meets all foreseeable technical and legal problems of protecting the national interest; that there was no better alternative or acceptable alternative or better use of the Columbia river than that provided; that the various projects were wisely selected; that the price paid to Canada for its power and flood control benefits was a fair one, making possible the construction of the treaty projects and immense benefits to Canada; and, finally, that the treaty not only maintains Canadian independence but that the essential integrity of the Boundary Waters Treaty of 1909 has not been affected.

At the bottom of page 16 in the second last paragraph reference is made to the boom conditions created in the United States by the second world war, the consequent availability of power in the Pacific northwest area and the effect that that has had on the development of industry and on the increase of population.

The final paragraph indicates that at the present time in British Columbia there are undeveloped hydroelectric power sites having a potential of about 22 million kilowatts of prime power, or about 33 million kilowatts of capacity at 65 per cent load factor. In comparison with this there has been developed, as you will see at the top of the next page, in the province only 2.6 million kilowatts of capacity.

Later on down the page, in the second last paragraph we read:

The ever-expanding load in British Columbia can only be met successfully and economically from large power developments. As these large hydro installations take up to 10 years for completion of their engineering and construction, the province has to plan its power development program well in advance. Power from the Peace river development which is now underway in the northeastern part of the province will be capable of meeting forecast loads from 1968 until the mid 1970's. At that time the development of the Columbia River Treaty dams will be completed and paid for through the sale of downstream power benefits to the United States and the generation of power in Canada from these projects will be available at very low cost. This development could start with the "machining" of the Mica project to its ultimate capacity of 1.8 million kilowatts, and then proceed with construction of plants at Downie creek, Revelstoke canyon and other sites until a total of about 4 million kilowatts of new capacity has been installed in the Columbia river basin in Canada.

I should state what is at stake here—and we are grateful to General McNaughton for the concept of the sharing of the downstream benefits—is not the export of power, although I would be prepared to argue in favour of the export of power. What is involved here is not the sale or the export of power, but the sale of a service. It seems to me that the more closely one examines this treaty and its protocol, the clearer it becomes that what we really are deriving from this arrangement is an increment which would be completely lost but for that arrangement.

With regard to the export of power or the sale of downstream benefits, it is significant that the National Energy Board and the Water Resources Branch of the Department of Northern Affairs, the Dominion Coal Board, and Atomic Energy of Canada Limited, bodies responsible in large part for keeping in close touch with Canadian energy reserves, have found it possible to support the position taken by the federal government in this matter. It will be of interest to recall that on October 8, 1963, the Minister of Trade and Commerce announced a national policy in parliament which provided, as you will find at the bottom of page 19 of the document, that that policy was designed to encourage (a) development of large, low-cost power sources and to distribute the benefits thereof as widely as possible through interconnection between power systems in Canada; and, significantly, (b) to encourage power exports and interconnection between Canadian and United States power systems where such might induce early development of Canadian power resources.

Admittedly this reflects a change of policy in the course of a quarter century, and if this particular project did involve the export of power it would not be the first. I may tell the committee that there have been negotiations for the last few weeks for an arrangement whereby there would be an export of power to certain parts of Canada, by the United States. So this situation works both ways. In the particular instance to which I have made reference, the need for this importation is indeed very great.

Then, at the top of page 20 it is pointed out that because of this energy policy the Columbia River Treaty should be viewed as a greatly significant effort toward the advancement of regional and national energy programs that include not only the idea of regional and national electrical energy interchanges and grids, but perhaps even more urgently, the exploitation of hydro power resources wherever the Canadian potential and United States markets can accommodate each country's needs and interests.

On pages 21, 22, 23, 24 and 25 you will find a chronological statement of the various steps in the negotiations, beginning with September of 1943

when the United States Committee on Commerce adopted a resolution asking that the Corps of Engineers undertake a comprehensive survey of the Columbia river basin, and the reference proposed by the United States and agreed to by Canada to the International Joint Commission.

On page 28 your attention is called to the basic documents, that is to the treaty signed in 1961 and the protocol and proposed terms of sale which were signed in 1964, and the British Columbia-Canada agreements signed in July 1963 and January 1964.

It should be recalled that while the treaty was signed in 1961, it was signed by the then federal government in the absence of an agreement between British Columbia and Canada and in the absence—and I am simply stating this to indicate why we felt a protocol was necessary—of some understanding as to price. We believe that the treaty is a good one. What we have sought to do in the protocol—and this will be for you to decide—is to improve it. When we undertook the negotiations with the United States, beginning in May of 1963, it seemed to us that there were two things that we had to do.

First, before final negotiations with the United States, to get an agreement with the province of British Columbia, an agreement in which the respective obligations of the two governments would be set out. We were able to get an agreement in the month of July, and a subsequent agreement in the month of January, 1964, as a result of the unique conditions of the sales agreement entered into with the United States.

One of the conditions we laid down was that the Government of Canada did not propose to put up any money for any of the projects. The former administration had been prepared to pay 50 per cent of the cost of the projects. But the position we took was that we were not prepared to put up any money at all on federal account towards the construction of any of the projects.

There was full agreement on this, as well as on other points with British Columbia. We agreed, then, that there would be an agreement between British Columbia and Canada and that we would insist on getting from the United States a price that we felt was fair. We were not after anything exorbitant, but we wanted a fair and equitable recognition that the treaty involved beneficial consequences for both parties.

I believe, as we shall show, that the price that we have got from the United States was more than adequate. One of the standards we had in mind in the negotiations was that the money we received from the United States should be sufficient to pay for the capital cost involved in the establishment of the storages. In the articles signed in January, 1961, that was not in the treaty as a requirement.

The main features of that treaty, are recited in general terms, in (a) and (b) of paragraph one on page 28 and continuing through on to page 30 in paragraphs (c), (d), (e), and (f). I believe it is important for us to realize what these provide.

First of all in (a), Canada undertakes to build within a nine year period storage projects in the Columbia river basin at three points, at Arrow lakes, Duncan lake, and Mica creek. You will find in the plate on the opposite page a map of the northern portion of the Columbia river basin which shows the location of these three projects. The existence of these three projects is very important because it forms the basis of some of the contention between those who agree and those who do not agree with the treaty that is before you. You will see that some of these storages will be able to provide flood control, with a payment totalling at least \$64,400,000 (U.S.) to Canada. Possibly \$71,900,000 (U.S.) will be paid to Canada for flood damage prevented in the United States.

In (b) the United States is to operate all the existing hydroelectric plants in the basin, and any new projects on the main stem of the river so as to make

the best use of the Canadian storage. This power is either to be returned to Canada to the Canadian border for distribution in Canada or, as is the case under the sales agreement, sold in the United States under general conditions agreeable to both countries.

When I referred to the contribution made by Gen. McNaughton a moment ago, I thought that was perhaps the better place to raise it. We are grateful to Gen. McNaughton for the concept of the sharing of downstream benefits. This is a very important contribution indeed, and it has made possible the whole project. I am sure that if it were not for this arrangement, it would not be possible—and it would certainly be economically undesirable—to go ahead with the development independently in Canada. We would have lost, I think, a very great advantage. I simply throw this in by way of parenthesis before I come to (d), and say that if we had built the dams ourselves, without any money contributed by the United States—the independent power purchasers, or the Government of the United States—we would have lost a great advantage. And incidentally, if we had gone ahead and built these storages, we would have been still providing a benefit as a result of those storages to the United States, perhaps not in as orderly a way as they will now be provided, but they would have the benefit of this storage without paying any money for it whatsoever.

In (d) the United States is given the option of constructing a dam on the Kootenay river at Libby, Montana. We must be notified within five years of ratification of the treaty whether the project is to be constructed, and the project must be in full operation within seven years of that notification.

This is a very great benefit to Canada and incidentally, if the option is not exercised, then we have the right to do the very thing in terms of independent development which some of the critics have suggested is the preferable way to proceed. The United States will pay the entire cost of the dams and reservoirs in the United States. All that Canada has to provide are 13,700 acres of land which will be flooded on this side of the boundary, and the estimated cost of this flooding is around, I think, \$12,000,000. So, for this very small contribution Canada gets major benefits in flood control and increased power production at Canadian generating plants downstream on the river from Libby after the river re-enters Canada. Anyone who knows the situations of the Kootenays and knows the importance of the Cominco plants there, will realize what this will mean to that area. I have visited this area, and those from British Columbia can, I am sure—much better than I—testify to the tremendous significance of the supply of low cost power to that area. I hope that the committee will find it possible to invite the Cominco people here to give evidence on this very vital point.

In (e) it is noted that the treaty contains provisions regarding permissible diversions both for power purposes and for consumptive uses such as irrigation, domestic and municipal uses. You will find, by the way, in the interpretation section of the treaty, a definition of the words "consumptive use", and this may be very important in understanding the position that is taken with regard to the right of diversion for this purpose.

It is very important to note in (e) that either country may make whatever diversion is required for consumptive uses. However during the period of the treaty only Canada can make diversions, for power purposes, which will alter the course of the Columbia river or its tributaries where these cross the international boundary, and the diversion rights for power purposes permit the diversion in the Columbia at Canal Flats of about 20, 75 and 90 per cent of the flow of the Kootenay river before it enters the United States. These diversion rights, which are vital in this whole matter, can be exercised at 20, 60 and 80 years respectively from the date of ratification of the treaty. If the United States does not build the Libby dam under the terms of its option, the 90 per cent diversion may be made at any time.

Then, on page 31, we come to the protocol. I will not go into this in detail except to call attention to it, because I do want to discuss the protocol later on since it represents a very important development in the treaty.

On page 32, are to be found the proposed terms of the sale of the downstream benefits. Under the terms of the Columbia river treaty, sale of Canada's entitlement to downstream power benefits could not take place after the treaty was in force. However, this restriction has now been removed by the protocol and the governments of Canada and the United States, through an exchange of notes, have agreed in advance on general conditions and limits for an initial sale. They have undertaken to authorize a sale that meets these terms and conditions contemporaneously with the exchange of ratification. British Columbia and Canada each have acknowledged that this proposal is satisfactory.

I simply would like to point out that while Canada under an existing statute is not relieved of responsibility with regard to projects contemplated by the province, the owner of the resource, nevertheless a very fundamental consideration in this whole matter is the wish of the province of British Columbia. This will be a very important point when I come to discuss the actual selection of the sites for the proposed storages.

It is one thing to say, "Well, we believe that this particular storage or this particular site would be better than another", but if that does not meet the wishes of the province, the owner of the resource, then I think it becomes clear that you have a very strong case for intervention by the federal government. I am satisfied that the careful study given to this by British Columbia itself independently of the Canadian study, warrants the support which we have given to the selection of the particular sites. I am satisfied from all the evidence, technical and otherwise, that the sites selected are the best ones for Canada under this treaty.

The proposal requires the sale of Canada's share of the first 30 years' production of downstream power benefits of each treaty project to a single private purchaser in the United States rather than to a government agency. In return for this, in addition to the flood control payment of \$64 million, \$69 million, or \$71 million (U.S.), Canada will receive complete repayment in a lump sum totalling \$254,400,000 (U.S.) or \$274,800,000 (Canadian) upon ratification of the treaty. There is to be no right of renewal of the sale contract, so there is no question of the full right of recapture. The formal and detailed contract of sale between the purchaser and the British Columbia Hydro and Power Authority, the Canadian entity for treaty purposes, will cover a wide range of technical matters acceptable to them. However, it must conform to and is subject to the general conditions and limits agreed to by the governments and set out in the attachment to the exchange of notes.

At pages 36 and 37 you will find a discussion of the alternative or best uses of the Columbia river basin. I simply come to the conclusion on page 39 of the argumentation in that context by referring you to the penultimate paragraph on page 39.

The final conclusion indicated by the federal government power studies was that a plan of development providing for a limited diversion of the Kootenay river, preferably at Canal Flats, where only a low and relatively inexpensive structure would be required, was the best use of the river basin in Canada for power purposes. If you will look at the plan on the following page, which you later will examine, you will find this spelled out in greater detail. I simply add that while this plan of best use would at its ultimate stage of development produce somewhat less power for Canada than a maximum diversion plan such as is proposed by some of the critics, the last added

increment of energy provided by a maximum diversion plan from the Kootenay to the Columbia did not appear competitive with alternative sources of energy. This conclusion, favouring only a limited diversion of the Kootenay river has been supported by studies carried on independently by Canadian consulting engineering firms, as I mentioned in my opening statement this morning.

Now, on page 42, in the middle of the page, it is pointed out that with regard to the studies of best use there was unanimity as to the desirability of what I have just been talking about: namely a limited Kootenay river diversion instead of the maximum diversion plan that would have produced more power at greater expense, and with an over-all resulting disadvantage. Those studies showed unanimity in their views in respect of the marginal economics of even this best use of water for power purposes in Canada if it were developed—and this is the important point—independently by Canadians in Canada. So, therefore, even the best use plan for power in Canada on the Columbia river indicates the need for the benefits of cooperative development with the United States to make it a truly profitable venture for Canada. This is the underlying thesis all the way through: that is, we could do this alone and thereby escape the emotional charge, but we could not do it economically; we could not have done it by the production of power that would be practicable or competitive with the consequences of an international development.

Likewise on page 42, you will see under number three:

While the best use plan of Canadian development was initially determined primarily on the economics of its power potential, it also appeared as the best plan of development having regard to all other aspects of development in the basin.

These are discussed under the heading at the bottom of the page, industry and mining, under the heading agriculture; and forestry, fish and wild life; I think an examination of those paragraphs will reveal supporting evidence for the position taken with regard to the co-operative international development arrangement.

These are further discussed on page 48 under the headings recreation and irrigation and under transportation and dislocation problems on page 50.

There is no doubt that the development, particularly of the high Arrow project will mean dislocation, but it means a dislocation of a much lesser number of people than would have resulted under acceptance of the plan suggesting independent development. In any event, one of the consequences of our form of civilization is that we make material progress only as a result of inevitable dislocations of this kind. The Columbia, particularly at the high Arrow lakes, is one of the most beautiful spots in Canada. There is no doubt about that and I fully sympathize with those citizens who live in that area. However, I am sure, as I found from my contact, limited though it was, with so many in that area, that the topography or shoreline as a result of the development contemplated will provide its share of beauty too and it will provide advantages for British Columbia as a whole after proper compensation has been made. This has been assured by the British Columbia authority in the statement made by Dr. Keenleyside, which I used in my statement in the house.

At the bottom of page 50 you will find a statement of the summary of the best use or alternative plans, and this is continued on page 51.

When we come to page 52 I think this should be read with the correspondence I have exchanged with Premier Lloyd in respect of the question of diversion, as well as with Mr. Dinsdale's correspondence. The figures contained in table 3 at the top of page 56 indicate the cost of diversion.

Mr. RYAN: Do you mean at page 52?

Mr. MARTIN (*Essex East*): Yes, I am sorry, page 52. These figures indicate the cost of diversion from various bodies of water such as the north Saskatchewan, the Athabaska, the Peace river, the upper Fraser, the Columbia, the Columbia river at the surprise reservoir and the Kootenay.

Now, there is not any doubt in my mind that under article 13 of the treaty there is a clear right of diversion for consumptive uses, and what has to be read with this is the fact that the province is the owner of the resource.

An hon. MEMBER: Hear, hear.

Mr. MARTIN (*Essex East*): We must never lose sight of this when we come to consider the right of diversion for power or for other purposes.

It is clear from table 3 and plate 8 on the opposite page that water diverted from the Kootenay or Columbia rivers, as is proposed by Premier Lloyd, would cost roughly double that of water from the Athabaska and the Peace rivers. When the value of lost hydro electric power generation on the Kootenay and Columbia rivers resulting from the diversion is added, the cost would increase to about three times that for water from the Athabaska and Peace rivers. In order to make a diversion effective from the Columbia there would have to be provision made for a rise of 2,500 feet, which adds to the impracticability of the scheme. This is pointed out at the bottom of the page, where it says:

Since the diversion schemes would involve pumping lifts of up to 2,500 feet, their feasibility would depend to a considerable extent on the availability of sites on the eastern slopes of the Rockies for economic development of power projects to recover part of the pumping energy.

In this context I would like to simply say that I hope in your study of this problem you will find it useful to question Mr. Gordon MacNabb, a young engineer of the department of northern resources who has worked on this problem for some considerable time and whose technical knowledge of this subject I believe cannot be equalled by anyone. He is a devoted and dedicated public servant and I hope you take advantage of his presence to question him on this particular technical aspect of this diversion. Likewise, you will find in the persons of Mr. Kidd and Mr. Kennedy of the public service of British Columbia very competent witnesses on this and other problems. They will be supported by the studies that have been made by private engineering firms outside of the government altogether.

On page 58 we come to the important question of the selection of the sites. In the selection of the sites is to be found the heart of the controversy with what I hope now is an increasingly limited number of critics to the treaty. I may say that the critics, notably General McNaughton, have given this matter a great deal of attention. Not only because I know General McNaughton personally but because he is a great Canadian and because he has rendered very distinguished service to our country, I know that you will give General McNaughton's point of view the care which it deserves. Although we do not agree, his approach to this is that of a very sincere and dedicated Canadian for whom I have the greatest respect. When I undertook these negotiations I made it a point to confer with him. We had several very useful discussions, to which you will find reference in our correspondence. My regret is that I was not able fully to satisfy the General in respect of the conclusions that we in the government of Canada, after collaboration with British Columbia, decided to reach, although I think that the protocol does cover a number of his points. While I am on this subject I would like to call your attention, particularly to my letter to General McNaughton of August 6, 1963, his reply of August 22, 1963, and my reply to that of December 10, 1963. The correspondence between the General and myself is not as familiar as that between Bernard Shaw and the American actress but, technically, it is more useful.

I call your attention at this time to one of the power principles stated by the International Joint Commission on page 58, of which at one time General McNaughton was the distinguished chairman of the Canadian section. In the middle of page 58 the following appears:

Power Principle No. 4.

The amount of power benefits determined to result in the downstream country from regulation of flow by storage in the upstream country would normally be expressed as the increase in dependable hydro electric capacity in kilowatts under an agreed upon critical stream-flow condition, and the increase in average annual usable hydro electric energy output in kilowatt hours on the basis of an agreed upon period of stream flow record.

It is significant that every step in the treaty and every step in the protocol are consistently in my judgment with the principles laid down by the International Joint Commission, and you will find support for what I have said on this particular point at page 59.

At page 61 appears a discussion in respect of the validity of choices made under the treaty, and I feel this is vital. It is pointed out that Canada entered into the negotiations for the treaty projects with not only the background of many years of study of the best independent plan of development, but also with the knowledge that it must negotiate for the very favourable "first-added" credit position for its treaty storages. At the same time, and I point this out, Canada was guided by the International Joint Commission "principles" which, among other things, called generally for the most economical project yielding the highest benefit-cost-ratio to be built first, and for the upstream country operating the storage to provide the downstream country with an "assured plan" of operation of the storage. These factors have all been borne in mind in the selection of the treaty projects. My contention is that to have selected other storages, particularly those represented by some of the critics, of whom there are one or two in this room today, would not be in conformity with these International Joint Commission "principles" of the most economical project. The economical project will be determined by the cost of power made available after the construction of the projects.

While the best use plan of independent development of the river in Canada was one of limited diversion of the Kootenay river at Canal Flats, the margin of benefit this plan held over alternatives depended upon the construction of the Libby storage dam on the Kootenay river at United States expense, with Canada retaining all the resulting benefits downstream on that river in Canada. Such an arrangement was of course a matter of negotiation, and a United States requirement that Libby be given a "first-added" storage credit position before Canadian storage would have destroyed the advantages this plan held out since it would have downgraded the value of Canadian storage built under the treaty. It also may have been possible for Canada to negotiate sufficient first-added downstream benefit credits for its storage, including the east Kootenay storage of the maximum diversion plan, so that the increase in benefits thus obtained would offset the disadvantages of that plan, thereby making it the plan of best use for Canada. This and all of the many other possibilities considered by the Canadian negotiators depended upon the attainment of a large share of the limited supply of downstream benefits which could be achieved in no other way but through negotiations with the United States, which naturally had its own plans for development, their own plans for co-operative development, and their own plans for national development. I do not think we negotiated this treaty and protocol too soon. We could easily have found ourselves without any area of negotiation left at all, if there had

been an undue delay in trying to meet with the United States in negotiating an arrangement which we believe is equitable and mutually beneficial.

It was with all of this knowledge that Canada entered into negotiations in 1960, and the Arrow lakes dam, as I will show you later, became an indispensable project for Canada during these negotiations. It was therefore included in every Canadian proposal made throughout the course of the negotiations. While there are critics of the Arrow project, in every Canadian proposal that has been made it has always been included, and one of the reasons is that it is indispensable to the generating potential at Mica. This question in respect of the selection of the Arrow lakes project is dealt with at pages 63 and 64. I just call your attention to this fact, and you might make note of it. At pages 69 and 73 there is a further discussion of the reasons for the selection of the Arrow lakes project and the importance of that development.

It is important as we come to page 66 to consider the East Kootenay projects because of the submissions that are made against it. Under (d) on page 66 at the bottom there is reference to the fact that the Kootenay river contributes about 40 per cent of the flow of the Columbia at the point where the two rivers join just north of the Canada-United States boundary. Like the Columbia itself, its flow is extremely variable. One of the main United States objectives in any agreed plan was to acquire adequate storage on it, both to provide flood protection and also to enable the maximum development of power, both on the Kootenai (you notice that in the United States they use an "ai" instead of "ay" in spelling it) and on the lower reaches of the Columbia.

From our point of view storage on the Kootenay was also important. It would provide flood protection on the lower Kootenay after it re-entered Canada and it would permit a substantial increase in the production of power between the Kootenay lakes and the Columbia river. These would be the benefits of storage if the water remained in the Kootenay itself. The other possibility to be considered was that of diverting some, much, or nearly all of its flow northward into Columbia lake and thence into the Columbia river. The former advantages could be obtained for Canada either by storages on the East Kootenay in Canada or by a storage at Libby, Montana. The latter advantages could only be obtained by storages in Canada.

There were a number of disadvantages in the East Kootenay storages in Canada. First of all they would be expensive; diversion of water northward would reduce the potential power supply to the industrialized lower Kootenay area in Canada; the diverted water would not produce added power output in Canada until generators were installed at Mica and other places on the Columbia, which would not be for some years and, finally, they would mean very extensive flooding, some 86,600 acres in the East Kootenay valley in Canada.

Members of parliament will recall that Mr. Harkness, who was a member of the cabinet committee of the last government in respect of the Columbia, discussed this particular feature and it was the main point that he made in his statement in the House of Commons. He favoured an independent development and he was sympathetic toward this, but he said that he had to take into account the wishes of the province of British Columbia. It seems to me that this is an essential condition unless the wishes are clearly contrary to the discretionary power possessed by Canada under the particular statute which authorizes intervention. He also pointed out that one of the reasons why British Columbia did not prefer this was that the area to be flooded would be much greater than under the existing plan. The area of flooding under the East Kootenay storages would be some 86,600 acres. I should like to point out that if you compare the 86,600 acres with the 13,700 acres which would be

flooded at Libby, and only 27,000 acres flooded at High Arrow, I think it will be seen that the attitude of the province was quite understandable.

Against these disadvantages were two considerations. One was that, in the long term, a major diversion would produce slightly more power in Canada—about 10 per cent more—than a plan with a limited diversion although at such cost that it would be of dubious value. The second arose out of the negotiating situation when the bargaining began.

The next paragraph is not important for this purpose.

The Libby storage in the United States was fully engineered, and would provide at an early date the urgently needed flood control on the Kootenay river in the United States. It could be ready to operate as quickly as the Canadian storages in the East Kootenay, and earlier than Mica. On the other hand, its benefit-cost ratio was somewhat less favourable. Because the project could in fact be in operation before Mica, it was natural that the United States stressed the date of delivery of storage as being the proper determination of "first-added" status. The logic of the Canadian situation indicated that its negotiating position would be strongest if based on the storages that showed the highest benefit-cost ratios: High Arrow, Duncan, Mica and the Canadian East Kootenay storages at Dorr and Bull river-Luxor. This was the position adopted, despite the knowledge that, taken by themselves, it was doubtful the East Kootenay storages would be the best bargain for Canada.

This was the position, as I say, that was stated in the House of Commons on March 6.

It was recognized by the Canadian engineers on the technical liaison committee from the outset that they would not be the best bargain if (1) a first-added position could be secured for the other Canadian storages, placing all of them ahead of Libby, regardless of the fact that Libby could be built ahead of Mica, and (2) Canada had almost no cost to pay on Libby and got substantial benefits from it.

Twelve million dollars was involved as a result of the flooding contribution made by Canada, the full cost of power generated in the United States being paid for by the United States, and the full cost of all of the storages at Mica, High Arrow and Duncan being paid for by the United States. I do not see how anybody, in the face of this, can say there was any selling out of Canada, particularly when you bear in mind the right of recapture and the limited demands that can be made for flood control later on. I think in this treaty Canada got a deal that is surprisingly good.

Canada accordingly argued for its storages and rested its case squarely on general principle No. 1.

This was laid down by the International Joint Commission.

British Columbia had accepted the position with some reluctance because of the flooding involved in the East Kootenays. The United States made it clear that "factors not reflected" in the benefit-cost ratio were of great importance to it and that, if Canada would not agree to the Libby storage, it would not agree to first-added position for the Canadian storages unless it got the kind of advantages it knew it could get from Libby.

And so you will find on pages 69, 71 and 73 the argument in favour of High Arrow. I should like to call your attention particularly to page 71 on which appears the statement by the Department of Agriculture on the effect of these developments on agriculture.

My attention is called to the paragraph at the bottom of page 68. However, I think I already covered that point.

On page 71 you will see the opinion of the Department of Agriculture on the effect this has in the valley of the Arrow lakes, on its agricultural potential and present position.

On page 73, in the middle of the page it reads as follows:

To summarize: The cost of the Arrow lakes dam and reservoir and the problems of dislocation are considerable, but the project from the engineering aspects is completely sound and remains very economical. Equally important—and this was the role it played during the negotiations—Arrow lakes was, and still remains, the key to a successful co-operative development of the river by Canada. Such a beneficial co-operative development in turn makes possible the further economic development of over four million kilowatts of installation on the river in Canada. The Arrow lakes project is therefore an essential undertaking by Canada.

Now, I will call your attention to page 77, and I do this because I want to be fair to those who take a different position from what is suggested there.

(d) The East Kootenay projects: The part played in the negotiations by the East Kootenay projects in Canada of Dorr, Bull river and Luxor has already been given. In the consideration of the economics of these projects it should be re-emphasized that the primary purpose of the projects would be to divert Kootenay river water to generating plants on the Columbia river in Canada. If such a diversion was only of marginal benefit to Canada even with the Columbia river in Canada fully developed, it was obvious that it would be quite impractical to go to the great expense of diverting these waters to the Columbia before there was any significant development on that river. Even for an independent Canadian development the obvious solution was to postpone construction of the diversion structures until the last stage of such Canadian development. In a co-operative development with the United States however, if a project was to share in the limited supply of downstream benefits, it had to be developed at an early date, particularly if it was to be truly competitive in any comparison with the Libby project in the matter of providing the badly needed flood control benefits on the Kootenai river in the United States. The early provision of such flood control was one of the prime treaty requirements by the United States. Therefore, if Canada wished to obtain downstream benefits for the East Kootenay projects, those projects would have had to be built many years in advance of the time required for their power benefits within Canada.

In an attempt to offset this problem Canada considered the construction of the Bull river and Dorr projects only, with no immediate provision for the Luxor project or the maximum diversion of Kootenay river water. However, bearing in mind the costs of construction, the resulting flooding of land in Canada, the head available for at-site generation in Canada, and the limited downstream benefit returns from the United States to be derived from the projects, such a proposal was not to Canada's advantage as opposed to the construction of Libby, at United States expense, and with Canada retaining the right to make the treaty diversion at Canal Flats.

This last is very important. Whether or not Libby is built, the right to that diversion continues. It was in view of these factors that we considered a plan of development that included the Libby project with its downstream benefit

credit position "last-added" after the Arrow lakes, Duncan lake and Mica projects, and the conditions associated with the acceptance of Libby are as I have already indicated: a flooded area that would cost us roughly \$12 million; Canada to retain all the downstream power and flood control benefits produced in Canada in the west Kootenays by the Libby dam; we retain the specific right of diversion—not terminable on short notice as in the case of the Boundary Waters Treaty of 1909—of the Kootenay river in Canada for increased power generation on the Columbia river; we have as well the immediate right—and this is contained in paragraph (iv) on page 78—to make the 90 per cent diversion if the United States does not act within five years on its option; in (v), the United States is to operate Libby for the advantage of the downstream plants in Canada if such operation does not detract from their own benefits; and, in (vi) no operation of Libby is to result in a violation of the International Joint Commission's order calling for specified maximum levels on Kootenay lake.

Under these conditions, the acceptance of Libby provided Canada with low cost power benefits as well as flood control benefits in what is known as the Creston flats area. The indirect control Canada has over the releases of Libby through the International Joint Commission order on Kootenay lake levels and through the regulation of those releases in Kootenay lake itself ensures about 200,000 kilowatts of average annual energy gain downstream in Canada. The at-site cost of this benefit is less than two mills per kilowatt hour, and it is important to remember this when you consider what would have been the result of the other diversion proposed.

The International Joint Commission "principle" which dealt with trans-boundary projects such as Libby stated—and I call your attention to it at the bottom of page 78—that

"...the entitlement of each country to participate in the development and to share in the downstream benefits resulting from storage, and in power generated at-site, should be determined by crediting to each country such portion of the storage capacity and head potential of the project as may be mutually agreed.

Now Canada did not wish to participate in the development of the relatively expensive Libby project other than providing the \$12 million reservoir required in Canada. The payment for the land area flooded in Canada is a small charge for the very large benefits recovered by Canada and is consistent with the maintenance of Canadian sovereignty—And I would remind you that the area flooded was 13,700 acres.

On page 79 we ask: How valid, again, were the treaty projects? We entered into the treaty negotiations with the much detailed knowledge of various plans of development in Canada and benefits and problems of those plans when developed independently by this country, and we emerged from the negotiations not only with a plan of development similar to the vest independent plan but with sufficient benefits from the co-operative development to make the full development of the Columbia river basin in Canada a guaranteed source of low cost power for Canada. These benefits of co-operative development were achieved without prejudicing Canada's freedom to operate the power system in Canada for the benefit of Canada.

I would say here by way of digression that a very important consideration in the negotiations was that with the development of the Peace river project, together with the other sources of power, we would be faced in a foreseeable period of time with surplus power. And having lost the advantage of being able to make an arrangement with the United States for the construction of projects, which in turn are going to make it possible for British Columbia to develop at Mica very cheap electric power, we would have lost this opportunity completely.

I can see only two arguments or only two arguable points against this treaty. I do not agree with the arguments that might be put forward but I can see now an argument could be put forward on an aesthetic basis with regard to High Arrow. I have a deep sympathy for those who feel this way about High Arrow, but I have already answered that, I think. I can see how another argument might be put forward that we did not get the best possible financial return. That is an arguable position to take, but I do not think it will be demonstrable. However, these are the only two points, I believe, in the face of the whole situation, of all the facts that we have sought to embrace in this document, that lend themselves to any serious criticism of the treaty and the protocol.

The selection of the Arrow lakes, Duncan lake and Mica projects, and the details of the co-operative development program itself, are essentially consistent with the "principles" of co-operative development recommended by the International Joint Commission. The treaty is not only generally consistent with those principles but also with the massively detailed findings resulting from a large number of studies on these problems undertaken over the past 20 years. I repeat—and this is fundamental—that the treaty's projects and general approach also have the complete agreement of the province of British Columbia, the owner of the resource. I stated the position as I see it on this point in my communication to General McNaughton on August 6, and I would like simply to refer to part of that correspondence which states my position. I say:

You objected to the treaty projects of High Arrow and Libby and suggested as an alternative the Bull river-Luxor projects in the Upper Columbia and East Kootenay valleys. This is a suggestion which has of course received a great deal of attention and which was debated in detail during the treaty negotiations themselves. The problem associated with such a suggested change of projects, aside altogether from the conclusions of engineering firms which support the High Arrow development, is the problem of jurisdiction.

From the records which are available, it would appear that the province of British Columbia, which under the British North America Act has jurisdiction over the water resources of that province, considered the alternatives and then selected the present treaty projects for inclusion in a co-operative plan of development. You yourself have testified that once the responsible government has reached a decision that a certain project cannot be built, it is idle exercise to go on considering it.

Now, in fairness, I say by way of parenthesis that Gen. McNaughton in his reply thought that I had overstated what he had established on this very point. But his language will have to speak for itself. However I would ask that it be compared to what I have now read.

This would now appear to be the case affecting Dorr, Bull river and Luxor reservoir, and in the absence of any communication from the province that it is prepared to reconsider its decision, I can see no practical alternative but to accept it.

We can of course prevent objectionable development of the Columbia river through our International Rivers Improvements Act. However, on the basis of engineering evidence—much of which we have already traversed in the documents that are before us—we have no reasonable basis to do this in the case of the Arrow lakes.

Moreover, while we can prevent certain developments, we cannot insist that others should take place. I keep saying that we must respect the position of the province of British Columbia as the owner of the resource, and I would certainly like to hear your views in that regard.

I think that this states exactly the position that I take, and that I am sure the former government took when it had to consider the projects that were under consideration. It remained simply to conduct careful negotiations to see what was acceptable to the government of the United States, because without their agreement the benefits of a system of co-operative development could not have been obtained.

Now, on page 82 we deal with the question: "Is the Treaty fair to Canada?" It is pointed out under that by far the largest immediate benefits from the regulation of Columbia river flows by storage projects in Canada, will be the increase in power generation and flood control protection provided downstream. And on the following pages up to 90 we give a detailed examination of this statement.

Now, when you come to consider the payment for the flood storages, for the flood control, of \$64,000,000 (U.S.) or, in some conceivable circumstances of \$71,000,000, it can be argued that this was not enough. This argument will be presented I am sure. I think it is possible to make this argument.

We, as the negotiating body, considered what the total income to Canada was going to be as a result of the payment of the money for annual flood control, or for flood control payments, together with the cost of the storages and the opportunity that these storages particularly at one project would make available for the generation of power. And I am satisfied that we got the acceptance of the standard which we laid down when we began our negotiations last May with the United States.

In December of 1962 an offer had been made by the United States that would have provided a yield of about 3.75 mills; and I think that you will find that the ultimate arrangement that we were able to get provided us with roughly \$100,000,000 more.

Now, I believe the sales agreement, and the cost of the storages—all the figures are contained in this documentation which we shall show—bear examination. I think it will be found that the money paid for the flood control and for power benefits show the bargain that we made in the treaty.

Now, on page 94 we deal with the costs that Canada incurred. These costs are found under No. 4. The natural reaction to this question is to add up the full cost of the treaty storages which you will find in table eight on page 96. These indicate the full cost of treaty storage in Canada and we can compare the total with the benefits derived from our share of the downstream and flood control benefits in the United States. In the comparison that will be made it seems to me essential that we should bear in mind a number of factors, and these are stated immediately at the bottom of page 94.

First, that both the Mica creek and the Duncan lake project and also the Arrow lakes project to a considerably smaller extent will assist in the generation of power in Canada. These costs therefore, while initially being incurred for the treaty, also provide storage facilities of very great benefit to generation in Canada itself.

In (ii) the treaty requires a storage capacity of only 7 million acre feet at Mica; whereas present cost estimates are for a project impounding 20 million acre feet. Of the remaining 13 million acre feet, 8 million acre feet are solely for the development of head and 5 million acre feet are for the regulation of flows for the generation of at-site and downstream power in Canada. If such Canadian generation were not planned a much smaller and much less expensive project would be built at Mica for the treaty.

Now, a comparison of the full Canadian treaty project costs with the downstream power benefits received by Canada from the United States, we contend, is not a valid comparison. But table eight on page 96 shows that even these large expenditures are more than offset by payments made by the United States for the downstream power benefits sold to them for only 30 years.

Because of the use of the treaty projects for power generation within Canada, a more accurate assessment of the net cost to Canada of its entitlement to downstream power benefits from the United States can be achieved by considering only the incremental costs of a co-operative development under the treaty as compared with an independent development within Canada.

Then table eight shows the payments to be made by the United States based on the value as of April 4, 1973. It shows the full capital costs—and you will see the date April 1, 1973—which indicate a surplus in so far as capital costs are concerned of over \$53 million, which in turn will represent, I think, half of the cost of generating power at Mica itself, yielding 1.5 mills at site.

Then on the next page are the details of the benefits Canada receives from the treaty, protocol and sales agreement, and these I have covered in my initial statement. It also deals with the period 60 years from ratification. What I would like to indicate is that this deals with some of the misconceptions which have arisen, particularly during the period 1961 through 1962 and part of 1963 with regard to the treaty, misconceptions about the demands that could be made on Canada. I ask you to note that after 60 years from ratification floods of sufficient magnitude to meet the protocol conditions for calls on Canadian flood control storage in this period have a probability of occurrence only once every 15 to 20 years. The argument is made that this imposes on Canada a servitude. Well, if this is servitude, we should consider that we have been selling power now for some time; we are not selling power now but are selling a service; we are negotiating for the importation of power from the United States; we are going to get, for very little, the benefits of the project at Libby. Therefore, it seems to me to be, indeed, a very inconsequential criticism.

I call your attention to table 9 on page 99, Estimated Canadian Entitlement.

Then there is the commentary on that at page 100, where it is pointed out:

The payment received from the power sales will, under the terms of the sales agreement, be \$254,400,000 (U.S.) or \$274,800,000 (Canadian) on the first of October 1964. This payment, made in advance and with interest earned at $4\frac{1}{2}$ per cent is equivalent to 4.4 mills per kilowatt hour for the total energy benefit sold, and 5.3 mills per kilowatt hour if the revenues for flood control are also included.

And I see no reason why they should not be added.

It is true there is an American interpretation which yields a lesser yield than 5.3 mills. The difference is simply based upon the discount on the Canadian dollar, the interpretation of the load factor, and our inclusion of the flood control payments. As Mr. Robertson reminds me, at page 173 of the February white paper, there is a full discussion of this which goes into all aspects of this phase of the argument.

The value to Canada of the advance payment for power along with the flood control payments of \$69.6 million (Canadian) can be expressed in a number of ways, one of which has been given on Table 8 where the total value of payments on 1 April 1973 of \$501 million (Canadian) is compared with the total value of compounded capital cost of the three storage dams of \$447.7 million. The surplus revenues on that date (April 1973) are sufficient to pay about one half the cost of installing 1.8 million kilowatts of generating capacity at the Mica dam. This installation is twice that of the Canadian generating installation at the Barnhart plant of the St. Lawrence river development.

So, the achievement and the consideration paid here is of the greatest order.

A second approach to the value of the payments is to apply them year by year to the cost of constructing and maintaining the treaty

storage over the full construction and sales period (1964 to 2003). Under this approach we find that all construction costs are paid as they occur and all operating and maintenance costs of the storage are fully covered. In addition, a revenue surplus of \$40 million remains at the end of the period. Over the full period of construction and sale, the value to Canada of the initial payments plus interest earned on the unused portions of those payments, totals \$488 million.

No matter which approach is used the end result is the full coverage of all treaty costs and with surplus revenues to be applied against Mica generation so that the average cost of the 6.6 billion kilowatt hours of energy produced annually at that site will be less than 1.5 mills per kilowatt hour.

Now, there are other benefits. These are stated at page 101. There is also one possible U.S. project not covered by the treaty at all; that is the Ben Franklin. Under Article IX of the treaty it will be possible that the project referred to in that article, the Ben Franklin, could be constructed downstream in the United States from the Canadian storage. This is not dealt with in the treaty at all. If it is decided later to include this as a project, there would be a new agreement covering this specific project with additional revenue not considered in the present benefit cost calculations.

Then, number 3 on page 101 deals with the benefits on the Kootenay river in Canada, and on page 102, the generation at Mica is covered. On page 104 the other benefits are cited, namely the diversion rights, including the diversion for consumptive and municipal uses as provided for in Article XIII, and other benefits such as flood control benefits which, of course, are very significant, as people in British Columbia will attest; then the balance of payment situation as a result of payment in advance—five years in advance—and 38½ years before the final use by the United States of the benefits being bought by them.

Then in the summary on page 104 we ask:

Is the treaty fair to Canada? On the basis of Canada's contributions and the returns from the proposed co-operative development, the answer must definitely be in the affirmative.

This is our contention, and it is a contention that is supported by the owner of the resource, the province of British Columbia. Canada's costs under the treaty are exceeded by the treaty benefits, even under the most critical analysis. The agreements which have been reached in respect of the measurement and division of downstream power and flood control benefits are generally consistent with the principles recommended in 1959 by the International Joint Commission. The payments made by the United States for the portion of benefits sold to that country are not only reasonable but are guaranteed; whereas the actual amount of the product sold is dependent upon a number of future and indefinable conditions.

Canada's contribution to the co-operative undertaking will be a regulation service for the flows of the Columbia river; no new water is being made available to the United States by this country. It is the same water that has been running for one thousand years and the same water that will run for many thousands of years, and it seems to me that this is something we must not forget. In providing this regulation service Canada has maintained sufficient flexibility of operation to protect its own generating projects in Canada. It will also benefit substantially from the Libby dam in the United States. All of this has been accomplished under treaty provisions that are fair and fully acceptable to all three governments concerned.

Mr. Chairman, this is the background material, a careful perusal of which I am sure the committee would find useful.

I am prepared now to go on and examine the treaty and the protocol, if it is your wish.

The CHAIRMAN: It has been suggested by the Vice Chairman that this might be an appropriate time to pause. Mr. Nesbitt suggested to me while you were speaking that perhaps the committee would agree to meet again at 4 o'clock.

Mr. MARTIN (*Essex East*): What was the time you suggested?

Mr. NESBITT: Four o'clock today.

The CHAIRMAN: Or, we could even meet this evening at 8 o'clock as the rooms are available today.

Mr. BYRNE: Mr. Chairman, it would seem to me that 4 o'clock would be a suitable hour.

Some hon. MEMBERS: Agreed.

Mr. LAPRISE: (French—not recorded.)

Mr. MARTIN (*Essex East*): (French—not recorded.)

Mr. LAPRISE (*Interpretation*): Mr. Chairman, I would like to ask if it would be possible for us to have simultaneous interpretation at our next meeting?

Mr. MARTIN (*Essex East*): (French—not recorded):

The CHAIRMAN: Mr. Laprise has raised the point of simultaneous translation which, of course, would be very desirable. However, this is a matter that was discussed very sympathetically and at some length with Mr. Plourde, who appeared on behalf of the Ralliement group.

Mr. Plourde was kind enough to indicate that if a translator was made available the two members of the committee who would otherwise have difficulty in following the proceedings would be pleased. However, he felt we at least could start and make some progress at the commencement of our deliberations without the impediment that would be provided by simultaneous translation.

One of the considerations in the mind of the steering committee is that we are going to be working very, very hard and for long hours continuously. A good many witnesses will be appearing before us during the next several weeks. There was a good deal to commend the use of this room rather than the facilities that are available in the west block because a good many members of parliament, particularly those in the smaller parties, have duties in the house as well as here.

I would be grateful if Mr. Laprise would discuss this at greater length with his colleague, Mr. Plourde, and perhaps the matter could be reviewed again in the steering committee. Of course, I am in the hands of the committee in this respect.

Mr. KINDT: Mr. Chairman, I think everyone has refrained from asking any questions during the presentation this morning in order to allow the minister to get the treaty properly before the committee. But, certainly a great many questions have flashed into the minds of the members of this committee, and I am wondering when we will be reverting to questions. Of course, we would not be in a position to ask many questions until such time as we have had an opportunity to study this.

Is the meeting this afternoon, at which time the minister is to complete his statement, to be one of silence on our part and then at a later time revert to questions? What is the procedure to be?

The CHAIRMAN: I understand the minister will take a little time yet to complete his initial statement which, of course, every member of the committee then will wish to study with great thoroughness.

I understand the Secretary of State for External Affairs intends to be with us during the course of a good many of the next meetings and perhaps there would be several days of cross-questioning based on the statement that has been put into the hands of the members of this committee today. I presume we will be allowed to put questions to the Secretary of State for External Affairs and also to his principal advisers. Perhaps I could have some assistance in this respect.

Mr. MARTIN (*Essex East*): Mr. Chairman, I am entirely in the hands of the committee. If it is thought desirable to ask questions on that portion I have dealt with at this time will be up to the committee. However, I have been endeavouring to state the position as I had understood it resulting from the policy decisions of the former administration and our own decisions based on the protocol. Following this, I was going on to examine the treaty itself and the protocol in order to justify it because I do not think it is possible to have a full appreciation of what has gone on unless there is a full appreciation of the provisions of the treaty, what the protocol means and does, what the sales agreement provides and what obligations were incurred by Canada vis-à-vis the United States, vis-à-vis British Columbia and by these two other governments vis-à-vis Canada. The thought occurred to me my statement should be completed, and it was my desire to have this in the hands of the members of the committee in order to give them an opportunity of considering it carefully during the time at their disposal and to allow time for a study of the charts, plates, and so on. But, I will be available to the committee at any time.

As you realize, there are many aspects of this problem that require engineering knowledge and technical skills, which I do not possess. I would want the opportunity to call on my officials as well as officials from British Columbia to deal with some of the points that may arise. This was the plan of action I had in mind.

Mr. KINDT: Thank you. Mr. Chairman, I was just interested in clarifying the steps which this committee intended to take in order to prepare for future sittings of the committee.

Mr. DAVIS: Would the Secretary of State for External Affairs be able to complete his opening statement today if we reconvened at four or eight o'clock?

Mr. MARTIN (*Essex East*): I am afraid I cannot be here tonight, unfortunately, but I can be here at four o'clock. I think perhaps I will be able to finish my statement easily at that time.

Mr. BYRNE: Mr. Chairman, I move that this committee now adjourn and reconvene at four o'clock.

Mr. PATTERSON: Mr. Chairman, I was just going to suggest that it would perhaps be more advantageous to the committee to allow the Secretary of State for External Affairs to complete his presentation so that we will have all the information before us to analyse before proceeding with our questioning.

The CHAIRMAN: Yes. Do we have a seconder for Mr. Byrne's motion?

Mr. FLEMING (*Okanagan-Revelstoke*): I second the motion, Mr. Chairman.

The CHAIRMAN: All those in favour of the motion?

Motion agreed to.

I declare it carried. Thank you gentlemen.

AFTERNOON SESSION

TUESDAY, April 7, 1964.

The CHAIRMAN: Gentlemen, I see a quorum. We will now ask the Secretary of State for External Affairs if he would be good enough to continue his presentation.

Mr. MARTIN (*Essex East*): Mr. Chairman, before coming to the treaty I would direct the attention of the committee to pages 108 to 111 in which certain conclusions are reached and certain appraisals are offered. No. 1 deals with the best use of the river. No. 2 deals with downstream benefits. No. 3 deals with the best projects chosen—we discussed that this morning. The next one is on prices paid for power and flood control. Here I need only add that in our negotiations we had at all times insisted that one of the standards, in our concept of the consideration that should be paid, was the question of meeting the cost of all the projects. That was not the only consideration but it was definitely one of the considerations in my mind, and I publicly stated it at the time. When the treaty was concluded in 1961 there was no agreement on the price between the two Canadian jurisdictions, so that the sales agreement with B.C. represent new instruments, because new concepts had arisen. I have stated my firm belief that we negotiated a satisfactory price.

No. 5 on page 109 deals with the very important question of the extent of the U.S. claim on Canada in respect of flood control, and the commentary there speaks for itself. The same applies to No. 6 on consumptive uses which was already pretty well discussed in the exchange of correspondence with the premier of Saskatchewan.

No. 7 is on what can happen after the thirty years will have expired, when the project will be built and all paid for and when power will have been generated at Mica.

No. 8 seeks to establish that the sale of downstream benefits is consistent with sound export policy.

No. 9 deals with the Arrow lakes and its people. We have already referred to it in another context.

No. 10 deals with the contribution to international law, and it may be of interest to the international lawyers to note that there is now already a considerable bibliography on the implications of this treaty in respect of power agreements as compared with developments in other countries.

No. 11 deals with the question of Canadian independence. I should simply like to say here that, altogether apart from what I said about Libby, I believe that these are specious arguments, but since they are made one has to address one's attention to them, that if there is any servitude or any dependence in this matter it would be on the part of the other contracting party because they depend very considerably on us for the storages that will be built with their funds in our country. However, I do not myself believe that much is to be gained by this kind of an argument and I simply offer that in answer to the suggestions which have been made from time to time that there has been an unwarranted sale of our heritage and our resource. I do not believe that anyone who has given careful consideration to this treaty and to the protocol can seriously entertain such thoughts.

The treaty was signed—and its terms are to be found beginning on page 115—in Washington on January 17, 1961, by the head of the government of Canada at that time and by President Eisenhower. The treaty was signed without, as I said, there being any agreement between British Columbia and Canada and without there having been any determination as to compensation to be paid for the sale of downstream benefits, and also under conditions that elicited a commitment from the federal government of that day that it would be prepared to pay 50 per cent of the cost of the necessary storages.

The preamble speaks for itself and it simply indicates certain concepts of co-operation between Canada and the United States, and emphasizes two main principles: that resource development should be carried on to effect the largest contribution to the economic progress of both countries; and that the greatest benefit to each country in hydroelectric power and flood control can be secured by co-operative measures.

Article I, which is the interpretation clause, speaks for itself. I would call your attention to (e) in the interpretation clause, defining "consumptive use", which will have a very important bearing on the question of the rights of diversion under article XIII.

(e) "consumptive use" means use of water for domestic, municipal, stock-water, irrigation, mining or industrial purposes but does not include use for the generation of hydroelectric power.

In the correspondence with Premire Lloyd there appears a shift of position, if I may so refer to it in this case. In the first instance, in the correspondence between the premier and Mr. Dinsdale and later the premier and myself, the emphasis was on the desirability of our being able to assure the government of Saskatchewan that water would be available from the Columbia for consumptive purposes. When apparent satisfaction was given on this score it was suggested that we might inquire whether or not water for the purpose of generating hydroelectric power could be diverted. This of course would have been contrary to (e) in the interpretation clause, and it would run counter to what undoubtedly in the circumstances would be the wish of the owner of the resource, that is the province of British Columbia.

There are fifteen expressions used in the treaty and they are defined. I think that knowledge of them will assist in the understanding of certain parts of this treaty which admittedly are very complicated.

The final paragraph in the interpretation section is a technical device to avoid cumbersome language and to make it clear, whenever circumstances require some action to be taken pursuant to the treaty it may be taken even though such action had previously been taken pursuant to the treaty. This is to avoid some of the complications that arise in international agreements.

Article II, as you will see from the commentary on page 118, provides for the basic plan of the treaty, which is the storage of water in Canada at the three locations, Duncan, Arrow lakes and Mica, during the high flow period of the summer months and its regulated release over the low period of late fall, winter and early spring, in order to improve the flow of the Columbia in both countries for power generation and flood control purposes.

In the agreement that Canada has with British Columbia, the latter has agreed to construct these three dams at its own expense, and it has covenanted that Canada is to have no financial obligations with respect to the financing of these three projects. There is in the Canada-British Columbia agreement a complete indemnification provided by British Columbia to Canada for any act, apart from an act of God, not due to Canada itself which may cause difficulties or a violation of agreed rights in the United States.

The storage reservoir of the dam at Mica will provide approximately 20 million acre-feet of storage but only 7 million acre-feet have been committed for operation under the treaty for power purposes.

Then provision is made for when the construction of the projects shall begin. The construction time schedule in Article IV, which is nine years for Mica and five years for both Arrow lakes and Duncan, has been decreased, as you will see from the terms of sale which will be referred to later on.

Article III provides that the United States agrees to make full use of the improved stream flow brought about by the Canadian storages so that the maximum benefits will be available to Canada. However, since the determination of Canada's share of downstream power benefits is calculated five years in advance and is a theoretical amount based on historic stream flows rather than the actual amount of power produced at any given time, paragraph 2 of that article requires that the calculation of the downstream power benefits must assume optimum use of the regulation provided by the Canadian storage. The result is that Canada will receive the greatest possible amounts of power

or, in this case, compensation therefor. There is provision that if the United States operates its generating facilities in less than an optimum manner there is no loss to Canada but rather to the United States.

The comment in connection with article IV appears on page 121. This article contains the basic agreement of Canada to operate the storages at Arrow and at Duncan lake, and the committed portion of the storage at Mica for power generation and flood control downstream, and this should be read with Annex A of the treaty.

Because of the importance of the operating plans for power generation, a certain degree of control has been retained by the governments both of Canada and the United States. The entities of the purchaser and of British Columbia are free to formulate plans with the assistance of the Permanent Engineering Board, a body that is provided for in the treaty. However, the plans must be submitted to the governments for approval if they depart substantially from those prepared for the previous years. Under this article Canada's obligation to operate for flood control is described by reference to two periods of time. The first period is the initial 60 years of the treaty and the second comprises subsequent years. We have already made reference to the first period this morning; it is that period provided for in No. 1 and that provided for in No. 2 on page 121.

It is significant, as is pointed out at the bottom of the page, that:

For the second period the obligation is to operate for flood control any storage in the Columbia river basin provided by facilities existing from time to time as specific flood control calls are made by the United States entity.

There has been a lot of talk about this provision in the treaty, but the fact is that Canada is not required under this obligation to build, create or even maintain any particular project or dam unless the treaty is still in force and maintenance of the dam is required for purposes connected with downstream power benefits. The obligation exists only if the flows of the Columbia in Canada do in fact contribute to flood hazard in the United States. So if Canadian development, including diversion, has removed this contribution there is no obligation on Canada. The payment for this provision is set out in article VI.

However, when we come to the protocol it will be indicated that the protocol modifies this obligation to operate for flood control so that no greater degree of flood control protection can be called for than that permitted during the first period. In addition, the protocol limits the frequency and the extent of calls that may be made by the entity in the United States during the 60-year period or the period longer than 60 years, and the protocol, as we shall see, ensures that the Canadian operating entity and the permanent engineering board will have a substantial role in determining whether or not the need for flood control in the United States is real; and that is a change from the provisions in the treaty.

Then article IV deals with the times when the storages are to commence and so on.

Article V deals with the important matter of entitlement to downstream power benefits. This is the article which establishes the right to one half of the increase in power generation of the United States plants owing to the improved stream flow resulting from the operation of the Canadian storages. Paragraph 2 of article V provides for the return to Canada of its share of the downstream power benefits. Of course, this has been taken care of by the unique arrangement that has been made to make compensation initially in the form of money and not in the form of power; and thereby, of course, the question of transmission, which would cost roughly \$2 million per year, is no longer a factor in effect, and, has been eliminated.

The result of the sales agreement is not only that the amount lost in transmission is no longer a factor, but that Canada, under the terms of sale, has no longer the responsibility of finding markets for this power for at least 30 years, because the responsibility for marketing rests entirely with the United States.

Article VI deals with the question of payment for flood control.

Mr. KINDT: Mr. Chairman, I wonder if you would permit one question? What was the total value which you gave us this morning, the value of the power before the discounting at present takes place at $4\frac{1}{2}$ per cent?

Mr. MARTIN (*Essex East*): The sum of \$274,000,000, Canadian, and \$254,000,000 American. The \$64,000,000, American, is for flood control.

Mr. KINDT: That is the discounted value at $4\frac{1}{2}$ per cent, discounting everything to the present; that \$274.8 million; that is what it comes to. Now then, they must have an over-all benefit, the value of power over the coming 30 years which at our discount at present is close to \$274 million. What is the total figure before the discounting takes place? Do you get my point? You must have had a total figure in order to arrive at \$274 million.

Mr. MARTIN (*Essex East*): If you look at the table on page 96 that takes it up to 1973 and the power benefits payment there would be \$416.1 million. It would vary every year; it is just a question of calculation. If you look at the table on page 99 you will see the estimated Canadian entitlement during the whole 30 year period. The agreed entitlement begins at 1968-69 at 113; and in 2002-2003, it is 207. So every year there is a theoretical amount.

Mr. KINDT: It should be the actual amount.

Mr. MARTIN (*Essex East*): Well, it is the actual amount, but when you deal with the future, you can only deal with it in theory.

Mr. KINDT: It has to be the actual amount discounted to the present, and it is the actual amount that I am after. On the part of your engineers, we know what $4\frac{1}{2}$ per cent of it amounts to, and I suggest we must have this figure before we can analyse the situation properly in order to see if Canada will come out fair at \$274.8 million.

The CHAIRMAN: Now, gentlemen, I thought it was understood—of course I am in the hands of the committee—there would be first of all a statement.

Mr. KINDT: Very well, I will hold my question over until tomorrow.

The CHAIRMAN: We may be able to get back to this question in a few minutes. But if Dr. Kindt would be kind enough to hold this question until immediately following the minister it would be helpful.

Mr. KINDT: That would be fine.

Mr. MARTIN (*Essex East*): I do not mind.

Mr. BYRNE: It is too wide.

Mr. DAVIS: I think the answer is that the minister mentioned the table on page 99, of which the fourth column over is headed "agreed entitlement"; this is the amount of energy each year and if you multiply that by 3.75 mills United States, those are the dollars due to Canada in each of those years. Your Canadian dollar is discounted at $4\frac{1}{2}$ per cent, and you arrive at the United States figure of \$250 million odd.

Mr. MARTIN (*Essex East*): That is right. If you total the whole thing up, you get an unreal figure; if you total it up to 1973 you get a figure of 416, and if you add the others you naturally would get something bigger.

The CHAIRMAN: Let us go on with the presentation and if Dr. Kindt is not satisfied with the answer he has received, he might be kind enough to repeat his query.

Mr. MARTIN (*Essex East*): What the doctor is trying to do in effect is really to show the great value, and you are projecting yourself away ahead; and it only adds to the tremendous value at the end of the 30 year period of this arrangement.

Mr. KINDT: Let us follow the Chairman's suggestion and come back to that later.

The CHAIRMAN: All right, Dr. Kindt.

Mr. MARTIN (*Essex East*): I do not know whether the doctor had this in mind, but I think the consequences of his question are very important, because it does show that at the end of a period the value of this arrangement is away beyond the \$501 million carried up to 1973. And we are projecting our standard of value—only up to the nine years. When we projected that much further ahead, we see what a tremendous economic advantage this whole arrangement is to Canada.

Mr. KINDT: Was there not some question of jacking up the interest rate? If that interest rate had been four or $3\frac{1}{2}$ per cent, this figure would have been far greater than the \$274 million at the present time.

Mr. MARTIN (*Essex East*): That is quite right.

The CHAIRMAN: It is self evident.

Mr. KINDT: Who decided on the $4\frac{1}{2}$ per cent? Those are some of the questions we must get into later.

Mr. MARTIN (*Essex East*): That is the fair rate in the United States, and that is the rate which is in current use in the United States.

Mr. KINDT: They use different rates.

Mr. MARTIN (*Essex East*): The power people will tell you that what I just said is the situation.

Mr. DAVIS: The group that is doing the financing in the United States are using what rate?

Mr. MARTIN (*Essex East*): They are using the rate which is the current rate for them. Look at the February white paper page 174—(c), and I will read it out, because this is an important point.

(c) The appropriate interest rate

In reducing future payments to their "present worth" or in raising a figure of present worth to its value at a future date, a rate of interest which is appropriate to the circumstances must be selected. In determining the "present worth" of a series of annual revenues which the United States expected to earn from the disposal of Canada's power entitlement the United States used a rate of $4\frac{1}{2}$ per cent. This was deemed to be the approximate rate at which the agencies concerned in the United States could borrow or invest funds over a long term. The lower the interest rate chosen, the larger will be the "present worth".

In article VII—no, we are still on article VI "payment for flood control", it is set out, and I do not think we need to add any more than what is stated there, particularly in the final paragraph. We dealt with the determination of downstream power benefits. Now we are in the determination of the downstream power benefits in article VII, that is, the method of calculating the downstream benefits which are stated there, and I do not think it requires any further comment except an examination.

Article VIII of the treaty deals with "disposal of entitlement to downstream power benefits". I think there are some points here, because it should be noted that item three of the protocol provides that the exchange of notes

provided for in article VIII (1) of the treaty shall take place contemporaneously with the exchange of the instruments of ratification of the treaty provided for in article XX of the treaty.

The general conditions and limits of sale to follow are outlined in the attachment relating to the terms of sale:

Paragraph (1) permits sale in the United States of portions of Canada's downstream power benefits if such sales are authorized by an exchange of notes between the two governments. This article envisages that the arrangements for the initial disposals would be made only after ratification of the treaty.

The date for ratification is October 1.

Paragraphs 3 and 4 of Article VIII which protect Canada against the unauthorized use of any portion of Canada's downstream power benefits and which also protect the United States against Canada selling surplus power below market prices in the United States, are, of course, because of the terms of sale, no longer of significance during the 30-year period.

Article IX deals with the variation of entitlement to downstream power benefits. There is one undeveloped power site on the main stream of the Columbia river in the United States. The economics of that are said to be marginal. The United States is permitted under certain circumstances to require modification of the equal sharing of the downstream power benefits with regard to this project; that is the one to which I think I made reference this morning, Ben Franklin, which has to be agreed to subsequently and which would be the subject matter of a separate agreement.

Article X deals with the question of stand-by transmissions. That has been substantially modified because of the proposed sale of Canada's entitlement to downstream power benefits. Under No. 4 in the protocol Canada is relieved of the stand-by charge and the United States of the obligation to provide this charge. As I say, this means a saving roughly of about \$2 million per year. So, there is not much point in the rest of it because of Protocol No. 4.

Article XI deals with the use of the improved stream flow. This provision ensures that the use of the improved stream flow by anyone to produce more hydroelectric power shall take place only under conditions approved by the appropriate authority. So far as Canada is concerned, the British Columbia water rights act requires government approval of any use of stream flow for power purposes.

Now, we come to the important article, Article XII, dealing with the Kootenai river development. Under this article the United States is given a five year option to commence construction of the Libby dam. As we saw this morning, this option is to be exercised by the United States if Canada is given written notice and a schedule of construction. The full operation of the project must begin within seven years of the time fixed for the commencement of the construction in the schedule of construction, and this in turn must be within five years of the date of ratification.

Under Article XIII (5), which must be read with this, Canada, of course, is given full right to divert all the Kootenay river water in Canada above the border other than the lesser of 1,000 cubic feet per second or the natural flow of the river, if the United States does not observe the various time limitations. That, of course, is a very important factor in the agreement made with the United States. Canada will not be required to share with the United States the flood control, or the substantial hydroelectric power benefits produced downstream in Canada which amount to roughly 200,000 kilowatt years per annum.

In view of this, Canada of course is to provide land required for the reservoir, approximately 13,700 acres, at a total cost of around \$12 million.

Now, Article XIII deals with the question of diversions; including the question of diversion into the Columbia if the Libby project did not go through. That, of course, is a very important consideration, because it meets practically completely the argument of some of the critics who are opposed to the Libby project.

Fundamental to the treaty is the provision of an improvement in the stream flow of the Columbia in order to improve the power generation capabilities of its water. As is pointed out at page 133, half way down in the commentary, it follows then that any substantial diminution of the quantity of water in the river would strike at the root of this principle and would substantially reduce the benefits that would normally result from the treaty arrangement. It was, therefore, reasonable and necessary to provide, we argue in this article, that neither country could interfere with the natural system of water courses in the basin without the consent of the other. Having committed the waters of the basin to a joint use for power and flood control, it would be manifestly unfair for one country to undertake development entirely inconsistent with that committal.

This is addressed to the argument that Premier Lloyd makes with regard to power. Obviously if you are going to use all of the Columbia water for a purpose other than what is agreed between the two countries, you defeat the purpose of that agreement; but an exception is made, and there is no doubt about that exception. As we shall show when we come to the protocol, we have a positive affirmation of this right. The right of diversion for consumptive uses is clear.

The commentary goes on:

However, because of the importance to life of the consumptive aspect of water resources it was agreed that the prohibition against diversion would not extend to a diversion for a consumptive use.

There was some doubt on the part of many, some of whom are in this room, in respect of the meaning of Article XIII with regard to consumptive uses; there was some doubt with regard to what it meant. However, I submit there can be no doubt now, because of the provision made in the protocol, of the positive right of consumptive use. Since he is here, I might just as well say that my colleague, Mr. Jack Davis, was very useful in this suggestion. So that in addition to the right to divert for consumptive uses, certain diversions from the Kootenay river to the Columbia are expressly authorized and these are very valuable rights, rights which in effect allow Canada—and I emphasize this—to carry out the whole of the Kootenay diversion in stages. These are of particular importance since they will result in substantial power generation in Canada at Mica and run of the river plants when such plants exist and generation is installed. I think these provisions compare favourably, from our point of view, with the position of diversions under the Boundary Waters Treaty of 1909 or under customary international law.

The three sets of steps leading to the final maximum Kootenay river power diversion are set out in the first, second and third categories at the top of page 134. Then I point out, again with emphasis, in addition if the United States does not build Libby or if it violates any of the various time requirements set out in article XII, Canada may forthwith carry out the maximum Kootenay diversion, which is the third stage described just immediately above.

I do not understand or agree with the objection taken to Libby but I can understand the enthusiasm of those who are in favour of the Dorr-Bull river-Luxor diversion scheme. But, may I point out that it does not mean that that scheme cannot be pursued if it was thought desirable to pursue it in the event of Libby not being proceeded with. But, as between the two, the evidence is uncontestable in favour of Libby. The reason for that is contained in the next paragraph.

The timing of the three stages of diversion is consistent with economic river basin planning. If the United States exercises its option to build Libby, it clearly must be assured of continued flows of water of sufficient scale to enable it to secure an adequate return for the investment it has made. Accordingly, we have agreed not to divert water at all for 20 years. A delay of this period is not likely to be of any important consequence to Canada as generators will probably not be installed on the Columbia in Canada to use diverted water for at least 10 to 15 years after ratification. While 20 per cent of the water can be diverted after 20 years, an adequate flow must be left until a reasonable amortization period for the Libby investment has expired, and this has been set at 60 years. The timing of the second stage is consistent with planning for further run of the river plants in Canada. The third stage, which is of questionable advantage, has nonetheless been retained as a protection against changing circumstances.

In connection with the meaning of "consumptive use" it should be noted that a diversion carried out for a true consumptive use, such as irrigation, does not cease to be an "authorized diversion" merely because the water while en route produces hydro electric power—and I would ask Mr. Brewin to pay great attention to this because I know he is interested in this question—either incidentally or even as an integral part of the diversion scheme.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Does Washington agree with you in that respect?

Mr. MARTIN (*Essex East*): Well, that is the treaty.

Mr. BREWIN: At a later time I would like to ask you for your authority for the statement.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This is Mr. Martin's comment.

Mr. MARTIN (*Essex East*): Well, our view of the treaty is as important as any other.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): It is not if it does not jibe with the view of the United States.

Mr. MARTIN (*Essex East*): We will satisfy you on this.

Mr. PUGH: Was this a subject of the protocol?

Mr. MARTIN (*Essex East*): Not the question of power but the question of diversion for consumptive use is.

Mr. PUGH: Power did not come into it, and that is your interpretation.

Mr. MARTIN (*Essex East*): Yes, and I have had no indication there is any disagreement. We have had a lot of discussion about this during the stage of negotiations; this interpretation was given by me and I am reminded by Mr. Robertson that there has been no contrary position taken. But, this does not mean to say there could not be. Any treaty is subject to all kinds of interpretation and no one knows that better than Mr. Brewin, who is a very good lawyer.

Mr. BREWIN: Thank you, Mr. Martin.

The CHAIRMAN: May we proceed. I would ask the Secretary of State for External Affairs not to provoke the members of the committee into asking further questions at this time.

Mr. PUGH: Mr. Martin loves handing out bouquets.

Mr. MARTIN (*Essex East*): I did not know I was provoking anyone by giving a compliment. I am just trying to get some relief because I have had a very tough day.

Article XIV of the treaty provides for the arrangements for implementation. The actual day to day operations of the Canadian storages and facilities will be

carried out by operating entities designated by each government, and paragraphs 2 and 3 of the article of the treaty set out their powers and duties. As we noted earlier today, the British Columbia Hydro and Power Authority will be the operating entity in Canada and in respect of the United States it is expected there will be a new organization which will be made up of the federal power distributing system, the Bonneville Power Administration in Portland, and the army Corps of Engineers in the Pacific northwest.

Finally, I call your attention to the paragraph at the top of page 137. It might be thought that it would follow from the proposed sale that the Canadian entity, for at least the 30 year period, had no interest in the annual calculation of benefits and related matters; however, such is not the case. The terms of sale in section B.4 expressly prevent any impairment of the equality and freedom described above. Notwithstanding sale, the Canadian entity continues to have a real and important interest in the joint activities contemplated by this article.

Article XV makes provision for the Permanent Engineering Board, sets out its constituent character and recites some of its obligations. The board will consist of four members, two appointed by Canada and two appointed by the United States.

The agreement between Canada and British Columbia provides that British Columbia may nominate one of the two Canadian members

The purposes of the board, apart from some of the assigned duties of adjudication, are to assemble and keep records of the flows of the Columbia river and the Kootenay rivers, to report and review for the two governments the activities of the operating entities and to help these resolve any differences that may arise between them in the operation of the storages and the calculation of the downstream power benefits.

Article XVI relates to the question of the method for dealing with settlements of differences. Provision is made for a reference by either government to the International Joint Commission. This is the general procedure established in the treaty for the settlement of disputes. However, if the commission delays beyond a period of three months in reaching a decision either government may then refer the matter to a special arbitration tribunal.

Article XVII provides in an affirmative way for certain legal matters. It deals with the question of restoration of pre-treaty legal status.

It makes clear in an affirmative way that once the special legal regime relating to the Columbia river basin as established by this treaty comes to an end as a result of its termination, the legal regime prevailing prior to the coming into force of this treaty, including the Boundary Waters Treaty, will again apply to the basin. This article should be read in connection with item 12 of the protocol which underlines the principle that the special legal regime of the Columbia does not establish any general principle or precedent applicable to waters other than those of the Columbia river basin.

Article XVIII deals with the question of liability for damage, and this is important.

Each country is liable to pay compensation to the other for losses of hydro electric power resulting from breaches of the treaty that were not brought about by war, strike, major calamity, act of God, uncontrollable force or maintenance curtailment. Liability of each country to the other for other breaches of the treaty, negligence and related conduct is accepted with damages payable as set out in the mentioned subarticles.

Paragraph 2 represents a major effort to eliminate damage claims. No person in the United States of America, as distinct from the government, may make a claim against Canada on account of any damage, no matter how caused. Each country must look after the matter of compensating its own residents for any damage they may suffer.

Each country agrees to take every step to minimize all losses and to alleviate as far as possible any damage or injury occurring or about to occur.

Paragraph 4 excuses Canada and the United States from strict compliance with the construction time schedules. However, the pre-payment flood control payments to Canada are reduced under Article VI until the service is actually provided. When we come to dealing with this in greater detail you will want to look at the agreements between Canada and British Columbia to see the extent to which Canada has been indemnified.

Mr. Robertson has just handed me the relevant clause of the Canada-British Columbia agreement wherein it is provided that British Columbia shall indemnify and save harmless Canada from and in respect of any liability of Canada to the United States of America arising under the treaty.

The period of the treaty is dealt with under Article XIX. The treaty may remain in force indefinitely. However, either Canada or the United States may, by giving the appropriate notice, bring the treaty to an end once it has been in force for 60 years. The period of sale, however, of the downstream benefits is for 30 years.

Some provisions of the treaty are not terminable. The section on rights of diversion granted to Canada under Article XIII cannot be terminated. The protection given to Canada under Article XVII with respect to the restoration of the pre-treaty legal status is not terminable. It is provided that if the treaty is terminated before the end of the useful life of the dams at Arrow lakes, Duncan lake and Mica creek, then Canada's obligation to provide certain of the flood control described in Article IV remains in force until those dams are retired from use.

Paragraph (d) provides that if the treaty is terminated before Libby dam has reached the end of its useful life, which means before the date on which it is permanently retired from service, by reason of obsolescence or wear and tear, then the permission given by Canada to the United States to operate Libby continues to bind Canada to keep the land available for the reservoir until Libby's useful life is ended. Those are the only non-terminal provisions of the treaty and they are understandable ones.

Mr. Ritchie thinks I should read the last sentence. It states that if after the termination of the treaty Canada requires any of the Libby reservoir area in Canada for use in diverting the Kootenay river, it may do so notwithstanding Libby's continued existence.

Article XX deals with ratification.

The procedural situation is this. We have presented parliament with a resolution referring this treaty and the protocol pursuant to commitments made by an administration to this committee. The government has signed the treaty. It has exchanged notes with the United States. As far as the government of Canada is concerned, it has taken a step which, for it, is irrevocable. We have declared it as a matter of policy to be a good treaty; we believe this to be a good protocol and we believe that we have got good agreements in the conditions of sale. As far as we are concerned we have taken our decision. We have entered into a solemn commitment as a government with the government of the United States. The government of the United States has ratified the treaty but we have said in our negotiations with them that we would not ratify the treaty until such time as this matter had been brought before parliament and referred to an appropriate committee. That step has been taken. I need only add that the deliberations of this committee are of the greatest consequence. The exchange of the instruments of ratification is the act which brings the treaty into full force between the two countries and until that time the treaty has no binding effect.

The final Article, XXI deals with the requirement under United Nations charter for registry of all treaties between member states.

Now, pages 145 to 157—before the protocol, I think speak pretty well for themselves.

Mr. BREWIN: Mr. Chairman, I wonder whether I could interrupt for a moment in order to find out how long we propose to go on. The minister is now coming to a new section, as it were, in his presentation. Some of us are very much interested in what is going on in another part of the house here. I do not know whether you intend to proceed or not.

The CHAIRMAN: Mr. Brewin, do you wish to move an adjournment?

Mr. BREWIN: I do not want to push my views over those of other members of this committee.

Mr. DEACHMAN: Would it be possible for us to adjourn at this time as a very interesting debate is going on in the house?

Mr. MARTIN (*Essex East*): You mean more interesting than this?

Mr. BREWIN: We will be able to have you again.

Mr. DEACHMAN: As you said yourself, this is irrevocable, but it is a question which sounds a good deal less irrevocable than what is going on somewhere else. Could we meet this evening?

Mr. MARTIN (*Essex East*): I cannot do that.

Mr. BYRNE: The debate in the House of Commons is purely academic while the debate here is technical.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): How long will it take the minister to complete his presentation?

Mr. MARTIN (*Essex East*): Three-quarters of an hour.

The CHAIRMAN: Gentlemen, may we continue?

Mr. BREWIN: I hope the minister will not think that I think his presentation is less interesting than what is going on in the house.

Mr. MARTIN (*Essex East*): I will not irrigate past you in your absence.

Well now, gentlemen, the position in regard to the protocol is as follows, that the President and the Prime Minister met at Hyannis Port and the Prime Minister indicated that there were some matters which we thought could be improved. We recognized the constitutional position in the United States that the treaty having gone before the appropriate legislative body and having been ratified, that if we were to negotiate *de novo* it would be necessary to go back to the legislative body in the United States. We thought it was desirable not to do this for reasons which I think are clear. However, we did get from the executive head of the government of the United States an assurance that we could negotiate for a protocol to embody what we believed would be desirable modifications.

As I have said, I believe that the treaty of 1961 is a good treaty—and I repeat that—and also that what we have done in the protocol is to make it a better treaty. In addition to that, what we have done is to get an agreement that sets out the respective obligations of two Canadian jurisdictions. There was no agreement between the government of British Columbia and the government of Canada up until 1963. The government felt that this was a dangerous situation, not because there was not the fullest confidence by both governments in the integrity of one another but in matters involving such important considerations as these we felt that it was important that there be a clear written understanding of the position of both governments to take care of any contingency in the future. That is the reason for our insistence on an agreement with the government of British Columbia. Likewise, we took the strong position, as I have mentioned, that contemporaneous with our seeking

to get improvements in the treaty by way of a protocol, we would have to insist on what we regarded as a fair price. This was the subject matter of understandable negotiation between British Columbia and Canada, and we took the position that as we were not going to pay anything towards the construction of the projects in any way it was only right that we should recognize the position of the province of British Columbia in this matter.

I told the premier of British Columbia that he would have to be satisfied as to the price and that we would have to be satisfied that the price obtained was one that would meet at least the cost of the projects and would not saddle the federal government with any financial obligation whatsoever. This condition of sale was established when we reached this agreement.

The protocol which begins on page 158 and which is an annex to the exchange of notes of January 22, 1964 between the governments of Canada and the United States signed by Mr. Rusk and myself sets out what we believe are improvements as a result of the negotiations that took place in 1963 and 1964.

I should like to make a comment here directed to Mr. Herridge. I regret he is not here but I will make the comment and he can take note of it. Speaking in the House of Commons, Mr. Herridge made reference to the phrase "the related storage" which will be found in subclause (1) of article 1 of the protocol. Mr. Herridge questioned the interpretation of these words on March 5, and I just want him to know, when he returns, that I will deal with what he regards as a very important series of words in that clause appearing on page 158.

The comment on page 159 sets out the provisions of the protocol.

Comment—As explained in the comment on articles IV and VI Canada has undertaken to provide flood protection in two ways. Firstly, in return for payment of \$64,400,000 U.S., 8,450,000 acre-feet of the storage at the three Canadian dams will be operated in accordance with flood control operating plans during the initial sixty-year period of the treaty. Secondly, other Canadian storage will be operated as and when required in accordance with flood control calls made by the United States entity. For calls made during the initial sixty-year period Canada receives a total of \$7,500,000 U.S. in four equal payments for the first four flood control periods, as well as an amount of power equal to all power lost by Canada in operating to comply with each and every call. For calls made after the initial sixty-year period Canada receives compensation for all economic loss to Canada, which includes but is not limited to loss of hydroelectric power. During both periods all calls can only relate to facilities in fact being maintained by Canada at the time the call is made. Canada is not required to construct or maintain any facilities for the purpose of these flood control calls. Moreover, if Canadian development, particularly diversions, has removed the flood hazard Canada has no obligation in this respect.

It is with these calls for flood control operation that this item of the protocol is concerned. The federal government was concerned with several aspects of these calls. Firstly, neither the Canadian operating entity, Canada, nor the Permanent Engineering Board had any say in determining whether the need for the flood control call was a real need. Secondly, there was no requirement that the United States should exhaust its own existing facilities before calling on Canada.

Thirdly, no limit was placed on the degree of flood control that could be required from Canada. Lastly, calls could become so frequent that they would interfere with the effective operation of Canadian facilities for our needs.

It will be seen that item I in the protocol improves to a very great degree our position regarding these calls for additional flood protection. Of first importance is the establishment of an objective test to determine whether flood control is actually needed and the recognition of the right of Canada to have a substantial voice in determining the extent and frequency of these calls.

It should be noted that notwithstanding this improvement of Canada's position, the amounts of compensation payable to Canada have not in any way been altered.

The scheme of item 1, requires that the United States entity making the additional flood control call must submit its request to the Canadian operating entity, which is given the right of rejecting or suggesting modifications to the call. If agreement between the entities cannot be reached, the call is then submitted for examination to the Permanent Engineering Board, which is a joint United States-Canada body. Its decision will be binding on both entities. However, so that the possibility of the loss of life will be avoided and damage to property minimized, we have agreed that the call will be honoured in the event that the board does not agree on the need for the call.

Item 1 is quite specific about when the United States can call for additional flood control. During the initial 60-year period of the treaty, calls for additional storage can only be made if the flood peak at The Dalles, Oregon, would exceed 600,000 cubic feet per second, the level of flood control at present desired by the United States, after the use of all storage facilities which existed or were under construction in the United States portion of the basin in January 1961, as well as the storage at the Libby dam and the 8,450,000 acre-feet of basic flood control storage provided by Canada. Thus, only a flood of major proportions would require the use of additional Canadian storage during this period.

After the initial 60-year period, calls upon Canada for flood control operation can be made only if the flood peak at The Dalles would exceed 600,000 cubic feet per second after the use of all storage facilities which existed in the basin in the United States at the expiration of this 60-year period.

So, I think, it is correct to say that Canada is effectively protected against an undue number of calls.

Mr. RYAN: It would also appear to me that the calls are no longer arbitrary, they are limited. There is a tremendous improvement here.

Mr. MARTIN (*Essex East*): Well, I think it is a very great improvement and it deals with one of the main criticisms that was levelled against the argument that Canada had laid itself open to a continuing obligation on the United States.

Now number 2. The provision is that in preparing the flood control operating plans in accordance with paragraph 5 of Annex A of the treaty, and in making calls to operate for flood control pursuant to Articles IV (2) (b) and IV (3) of the treaty, every effort will be made to minimize flood damage both in Canada and in the United States.

It is of considerable importance that while substantial flood control protection to Canada is automatic when the treaty projects are in operation, the specific inclusion of Canadian needs in the determination of flood control plans was not provided for in the treaty and is an important addition to the document. I think we are again indebted to Mr. Davis because he was one of those who insisted that we should try to get this addition in the protocol.

Coming to 3, you will see that the exchange of notes provided for in Article VIII (1) of the treaty shall take place contemporaneously with the exchange of the instruments of ratification of the treaty provided for in Article XX of the treaty.

This comment here is important:

The sale of Canada's entitlement to downstream power benefits for 30 years as now planned, and the absence of immediate markets for the power in Canada, makes it essential that assurance of purchase is made either before, or contemporaneously with, ratification of the treaty by Canada. The protocol requires a simultaneous exchange of ratifications and acceptance and conclusion of the initial sale agreement. This advance sale makes it possible to determine ahead of time how the proceeds of sale will relate to estimated cost. Also the difficulties in finding a market for Canada's downstream benefits, for at least 30 years, is no longer a concern of Canada.

This is a very vital result.

Coming to 4, I think I need not read the protocols.

The standby transmission charge payable by Canada under the treaty could have amounted to as much as \$2,000,000 a year. The protocol eliminates this charge during the period of sale in the United States of Canada's downstream power benefits.

Then coming to 5 we see at the top of page 162:

Inasmuch as control of historic streamflows of the Kootenay river by the dam provided for in article XII (1) of the treaty would result in more than 200,000 kilowatt years per annum of energy benefit downstream in Canada, as well as important flood control protection to Canada, and the operation of that dam is therefore of concern to Canada, the entities shall, pursuant to article XIV (2) (a) of the treaty, co-operate on a continuing basis to co-ordinate the operation of that dam with the operation of hydroelectric plants on the Kootenay river and elsewhere in Canada in accordance with the provisions of article XII (5) and article XII (6) of the treaty.

The comment on that shows that we will benefit from the operation of Libby and makes more specific the obligation of the United States to co-ordinate the operation of that dam with the Kootenay plants in Canada where that would not be against the interests of the United States.

With regard to protocol 6, the two countries are in agreement that article XIII (1) of the treaty provides to each of them a right to divert water for a consumptive use.

If there was ever any doubt about this right under article XIII of the treaty, it has certainly now, for consumptive uses including municipal use, been adequately dealt with in this provision of the protocol:

Any diversion of water from the Kootenay river when once instituted under the provisions of article XIII of the treaty is not subject to any limitation as to time.

I think that the comment here is vital:

Although it was intended that any diversion from the Kootenay to the Columbia under the treaty could continue in perpetuity once it was properly instituted, doubt was expressed that the wording of the treaty made it clear. This item assures that once a diversion of Kootenay waters is undertaken by Canada it may be continued forever.

Doubt was also expressed whether article XIII (1) of the treaty in a positive enough way, gave Canada the right to make diversions of Columbia waters for consumptive uses such as irrigation, domestic and municipal needs. Argument will be prevented on this point by this item's re-affirmation of Canada's right to make such diversions.

In connection with the definition of "consumptive use" in the treaty it should be pointed out that the fact that water being diverted for a consumptive use such as irrigation also produces hydroelectric power en route either as an integral or incidental part of the total operation does not result in that diversion ceasing to be a diversion for a consumptive use.

This was pointed out in the correspondence with Premier Lloyd. Mr. Dinsdale had pointed it out even before this change in the protocol.

The seventh provision in the protocol deals with the operation of the Canadian storage in accordance with the operating plans.

This is a rather technical clause and I think I need not spend time on it, but in connection with it I hope we will have some comments made later by Mr. MacNabb and others. The comment of course is important. There was some concern that the treaty gave the United States control over the operation of Canadian storage for power production in Canada. It cannot be easily substantiated that the treaty supports this concern. The consequence of this item in the protocol is to establish this clearly. The sense and essence of our plan of operation provides that it must be jointly agreed upon, and it must take into account the advantages now possible within Canada. You will note in paragraph (d) that Canada is given full discretion as to the detailed operation which will give the monthly storage quantities required by the agreed operating plan drawn up five years in advance.

Item 8. The eighth provision of the protocol deals with the stipulation of the 20 year period of stream flow to be used to calculate the downstream power benefits. This likewise is a technical one, but it is a vitally important one. I might as well read the first comment. The treaty stipulates that unless otherwise agreed, a 20 year period of stream flow record is to be used to calculate the downstream power benefits. Under this item a 30 year period of record is to be used instead. Twenty years was mentioned in the treaty, but we are using the longer period, and the use of the longer period of record has the effect of increasing the average flows under study, thereby increasing the need for control by Canadian storage and resulting in an average increase in Canada's downstream energy benefits of approximately 500,000,000 kilowatt hours annually, or an increase of about 18 per cent of the total energy benefits. So it will be seen that this represents a very substantial gain.

Item nine is a technical one, but nevertheless a very vital one, but I think it would be better to leave it for the engineers to comment upon.

Item ten is very important and I shall confine myself to the first paragraph in the comment. The protocol requires that in the calculation of Canada's capacity benefits, the power used to drive the irrigation pumps of the Banks equalizing reservoir (at the Grand Coulee project) be considered as part of the general system load rather than a station service load of the Grand Coulee plant, thus increasing Canada's capacity benefits by five per cent to seven per cent.

I shall look forward to hearing Mr. MacNabb tell us of the technical significance of this, which is regarded as of the greatest consequence.

Item 11 in the protocol touches on the question of the payment to be added to the \$64,000,000 amount if flood control storage is available ahead of time. In article VI of the treaty there is a provision for reduction in the \$64,400,000 United States payment for flood control if Canadian projects are late in commencing full operation. No provision is made in the treaty for an increase in the event that Canadian storage becomes operative earlier than required. This item allows for an upward adjustment of the payment to Canada if the storages are completed earlier than planned.

Item 12 of the protocol records the agreement that no new principle of general application is established by Treaty and that there is no detracting from the application of the Boundary Waters Treaty of 1909.

Now, it is not my intention to add to our statement beyond saying that the terms of sale of the Canadian entitlement are to be found in the remaining pages, 167, 168 and 169; and that the agreements with British Columbia are summarized at pages 170 and 171; these documents in their full extent are to be found in the February white paper which was tabled when I made my introductory statement in the House of Commons.

This is a review of the case as we see it. It is a review which will be supported by our technicians and our engineers, and is one which I believe will be supported by the owner of the resource, British Columbia; and it is a review which will be supported and indeed augmented by independent witnesses whom I hope it will be possible for this committee to call. I thank you very much for your patience.

Mr. KINDT: I have one question, Mr. Chairman. I wonder if the minister would once again state what the position of the government would be had it ratified this treaty and everything else, and if this committee should bring in additional recommendations for improvement? As I understand it our function here is to improve this treaty.

Mr. MARTIN (*Essex East*): No, not at all.

Mr. KINDT: Well, to improve the situation with respect to Canada.

Mr. MARTIN (*Essex East*): No, your function is to indicate whether you approve of what the government has done, whether you approve of this treaty, and whether you approve of the protocol, whether you approve of the sales agreement and the conditions of sale. That is the function of the committee. Any variation of it would of course involve a repudiation of the position taken by this government or by its predecessors in regard to the treaty.

Mr. KINDT: Does this not put the committee into the position of being pretty much a rubber stamp?

Mr. MARTIN (*Essex East*): Not at all. By careful study I think you can bring out the merits of various arguments, but we have agreed, as I stated in parliament, that after we had negotiated with the United States, after we had got a satisfactory price, after we had made modification which we thought desirable and possible, then we would enter into an exchange of notes with the United States, which we have done. But before we would ratify, we would come back to parliament and parliament could accept the course taken by the government or reject it.

Mr. BYRNE: I was simply going to ask the minister if when the former administration suggested that the treaty be put before a parliamentary committee, it was prepared to have it at that altered in any way?

Mr. MARTIN (*Essex East*): Of course not. The treaty was signed in Washington, by the President of the United States, by the Secretary of State for the United States, by the Prime Minister of Canada, and by the Minister of Justice. The treaty was not in that form submitted to parliament because there was not an opportunity to do so. But under our practice, the government of the day takes its responsibility. It negotiates a treaty with another country and it takes its responsibility, and having taken its position and responsibility, then it asks parliament to approve or to reject. That is the constitutional position.

Mr. DAVIS: Is it not correct that ratification is an executive act, or an act of the executive?

Mr. MARTIN (*Essex East*): That is right. There is no law which requires us to come to parliament or to refer the matter to a committee.

The negotiation and signing of a treaty are an executive responsibility. However, we said that before ratification we would submit the accomplishment or the results of our efforts to the committee for its approval and to parliament; that is what we have done. That was the policy indicated by the former government in respect of the treaty of 1961, and it is the practice always followed by governments in respect of international engagements under our political system, because it is an executive responsibility.

Mr. KINDT: My purpose in asking the question was just to put it on the record. I have no objection. It is just a question of everybody being of one mind.

Mr. MARTIN (*Essex East*): We had to make this very clear to the United States authorities during the negotiation. When we began the negotiation with the United States authorities, I outlined the situation as I have done right now to you. They had pointed out that they had ratified the treaty, that they had not delayed it, and so on. I said, notwithstanding the fact that we as an executive have decided on this, under our practice we are committed to come back to parliament. We stated that we proposed to do this before the treaty is ratified.

Mr. BYRNE: It would be fair to say, then, that the government must stand or fall by this.

Mr. MARTIN (*Essex East*): The government will stand or fall by this.

Mr. BYRNE: And if it were determined that this treaty should not be ratified, then this government would have to go to the people or have someone else ratify it.

Mr. MARTIN (*Essex East*): This government no longer would be in office. But, this is a good treaty and we do not have any hesitation in recommending it.

Mr. DINSDALE: Mr. Chairman, I do not suppose this is the time for general questioning, but I would like to clear up one point while the minister is here. During his presentation at several points he said there was no agreement between the federal government and the government of British Columbia with reference to the terms of the original agreement. While this might be true in a formalized sense, would he not say—

Mr. MARTIN (*Essex East*): What I meant is there certainly was no written agreement ever produced between the two which I ever saw. In making that statement I was not seeking to be controversial, because I am not.

Mr. DINSDALE: I am asking this question by way of clarification. Would the minister not say that the government of British Columbia, through its representatives, did approve of the terms of the initial treaty?

Mr. MARTIN (*Essex East*): Well, in fairness, I was not part of the negotiating team at that time; it was another administration. You were a distinguished member of that administration. You are in a position to state what happened. I do not think it would be proper for me to say what I believe to have been the nature of the negotiations or the arrangements between British Columbia and Canada. All I know is that when I took on the responsibility there was no agreement; there was no firm understanding. I came to the conclusion early that before beginning any negotiations with the United States, I would want to have it clearly understood between Canada and British Columbia what their respective attitudes towards the matter were. It was as a result of a period of negotiation that we did make the first agreement with British Columbia. There was no such agreement before.

Mr. PUGH: In writing.

Mr. MARTIN (*Essex East*): In writing. I am not saying there was not an understanding. I am not entering into that element because I know nothing about it. There are at this table officials who were part of that earlier negotiating team, and I would not want to embarrass them any more than I would want to talk about something about which I cannot have any first hand knowledge, except that there was no agreement before me, and this I insisted on having in writing before I began having my negotiation with the United States.

The CHAIRMAN: Mr. Dinsdale, you know that the steering committee authorized me to invite the Hon. Davie Fulton to appear before us if he would be kind enough to do so?

Mr. DINSDALE: Yes. I was going to make the comment—I appreciate the minister's remarks—that perhaps this point can be clarified when Mr. Fulton is before this committee. I can well understand the minister's desire to get some written agreement, because there were changes of position following the original discussions.

Mr. MARTIN (*Essex East*): This is a very vital and very important matter to Canada; it is one in respect of which I have no desire to derive any political advantage.

Mr. LEBOE: Mr. Chairman, I understand there are three or four responsible members from the government of British Columbia who are coming here, and Mr. Fulton, so that matter easily can be cleared up by these persons.

Mr. MARTIN (*Essex East*): Mr. Bonner and Mr. Williston both have assured me they will be prepared to come here and, as a matter of fact, Dr. Keenleyside, who was a valuable member of our negotiating group, along with Mr. Kidd and Mr. Kennedy. Mr. Kennedy from British Columbia is here. I would not want anybody to believe, because I pointed this out, that I was taking issue with Mr. Fulton. I have paid my tribute to the way Mr. Fulton had conducted the negotiation, and I do not take anything back in that regard. All I am saying is from my position I was faced with this difficulty that I thought it was desirable to have a written agreement with British Columbia. I would have thought that about any provincial government; it was not because it was the government of British Columbia; it was not a question of integrity but a question of a simple official position which I thought was desirable to adopt.

Mr. FLEMING (*Okanagan-Revelstoke*): Also, perhaps, as a result of the experience of Mr. Fulton with the government of British Columbia.

Mr. LEBOE: And the people of British Columbia.

Mr. MARTIN (*Essex East*): I will make no comment in a political arena about which I have little or no interest.

The CHAIRMAN: We have a motion by Mr. Haidasz, seconded by Mr. Cameron, that we adjourn.

Motion agreed to.

The CHAIRMAN: Might we arrive promptly at 10 o'clock on Thursday.

APPENDIX "A"

CORRESPONDENCE Between MINISTERS OF THE GOVERNMENT OF
CANADA AND PREMIER W. S. LLOYD OF SASKATCHEWAN
RELATING TO DEVELOPMENT OF THE COLUMBIA RIVER
BASIN IN CANADA

REGINA, June 21, 1962.

Hon. Walter Dinsdale,
Minister of Northern Affairs and
National Resources,
OTTAWA.

Dear Mr. Dinsdale:

Prior to the recent federal provincial conference on a national power transmission grid, my colleagues and I had an opportunity to consider several questions associated with the future development of the Saskatchewan river system. Some of these questions, although related to the question of a national power grid and mentioned briefly in our written submission to the conference, are essentially regional in character and it didn't seem appropriate to raise them for general discussion at the conference. I should like to draw them to your attention now.

We are particularly concerned about the adequacy of the flow in the Saskatchewan river system to supply future demands in the prairie region, the need for an early study of possible diversions from other basins into the Saskatchewan and any terms in the proposed Columbia treaty that might preclude certain diversions.

As you know, the Saskatchewan-Nelson drainage basin is the major source of surface water in the Prairie Provinces. We have other rivers in Saskatchewan, for example the Qu'Appelle and Souris, but their flow is not adequate to meet the existing demands on them. Future development in the Qu'Appelle basin, which includes the cities of Regina and Moose Jaw, will be based, among other things, on water imported from the South Saskatchewan. The lignite coal beds in the Estevan area offer tremendous possibilities as a source of low cost power but large scale utilization of this resource hinges on the feasibility of diverting water from the South Saskatchewan into the Souris. Allied with this are possibilities for greatly augmenting flows in Moose Mountain, Pipestone, and other adjacent creeks which would make it possible to consider irrigation, recreation and wildlife development for large areas in the dry south-eastern corner of the province. It is quite probable that in the future we will have to consider similar diversions into other water-short areas to serve growing agricultural, municipal and industrial needs.

The available flow in the Saskatchewan, however, is limited and a large portion of the flow has already been reserved. According to the 1960 annual report of the Prairie Provinces Water Board, over 5 million acre-feet of the flow of the South Saskatchewan has been allocated or reserved for consumptive use on existing or proposed projects. This is 45 per cent more water than the minimum recorded flow of the river and amounts to 70 per cent of the average annual flow.

I understand that these reservations are mostly for irrigation and other projects adjacent to or supplied directly from the river. Although it will be some time before these projects are fully developed, it may become necessary, or at least desirable, to expand the scope of such projects in the future. And, as I mentioned, future growth in other regions like the Qu'Appelle and Souris will depend among other things, on the extent to which water can be imported

from the Saskatchewan. In view of this, it would seem that in spite of the best conservation of water, secured by the South Saskatchewan and other like projects, the Prairie Provinces face a water shortage that could become acute within the next thirty to fifty years.

The gradual depletion of flows for consumptive purposes will also have an effect on the power potential of the system. During the past three years we have been studying the feasibility of developing several sites downstream of the South Saskatchewan dam. It appears probable that the entire head on the South Saskatchewan between the dam and the forks, and on the main river between the forks and the Manitoba border, may be developed. This would involve constructing a series of dams each forming a reservoir extending back to the next dam upstream. Although less favourable, the North Saskatchewan may be similarly developed. Estimates of future power requirements indicate that most of this capacity could be absorbed over the next thirty years.

I would expect that a similar potential exists in the Manitoba and Alberta portions of the basin. Manitoba is constructing Grand Rapids and I understand is investigating the potential on the Nelson. Alberta is constructing the Brazeau and there are reported to be several storage sites on the headwaters of both the north and south branches.

Because the flow in the system is limited, however, and more and more of this flow will be diverted for consumptive uses, the total available energy is small. If it were feasible to substantially increase the flow of the Saskatchewan, in stages as and when required, the threat of a serious water shortage in the prairie region would be removed. Furthermore, the potential hydro benefits may well cover the costs involved. For these reasons we feel that ways and means to increase the total flow of the Saskatchewan system should be studied at an early date.

In recent weeks our advisers have been looking into the possibility of diverting water from other watersheds into the Saskatchewan and there appear to be several alternatives. I believe that some of these have been looked at before, for example the Clearwater diversion from the north to the south branch and diversion from the Athabasca into the north branch. In addition to these, our advisers have examined several possible routes for diversion from the Peace, Fraser, Columbia and Kootenay.

Although a great deal more work would have to be done on this, their preliminary findings indicate the probable feasibility of stage by stage diversions from these watersheds to meet increasing consumptive needs and power requirements. Starting with those on the eastern side of the mountains, the Clearwater diversion would appear to be the logical first step. This would not increase the total flow in the system, however. Diversion from the Athabasca into the north branch might come next, but the amount of water that could be imported from that river is limited. The Peace appears to offer the largest single source of additional water; perhaps up to three times the average flow of the North Saskatchewan could be diverted, but like the Athabasca it would increase the flow of only the north branch and mainstem. While the costs of moving Fraser and Columbia water through the mountains are necessarily higher, our preliminary estimates are in line with the costs of similar diversions being undertaken in the United States. They may be acceptable at a later stage. The importance of the Columbia and/or Kootenay diversion lies in the fact that it appears to be the only direct means to augment the flow in the south branch of the river. For this reason, it may be desirable to undertake it prior to some of the others.

Although some of these diversions may be expensive, particularly from the Fraser and Columbia, the costs may be returned several times both directly by power benefits and indirectly by permitting a higher level of industrial, irrigation and other forms of economic development in the future. By 1966,

as you know, our governments will have spent about \$100 million to regulate the flow of the South Saskatchewan river which averages 6,000 to 8,000 cubic feet per second. The diversion of an equal or greater amount from other watersheds would at least double the energy available at all power sites on the Saskatchewan down to Grand Rapids and would substantially increase the energy available on the Nelson river. Our preliminary examination indicates that the value of this energy, much of which could be secured from existing installations, might well pay for the diversion costs.

We feel that the potential benefits of these diversions are so important to the long-term development of the prairies, and if feasible so clearly in the national interest, that the matter warrants a full and early study.

This question could be included within the terms of reference of the proposed Nelson Basin study or even the study of a national power grid but I don't think this would be desirable. It would mean a considerable delay since the Nelson study may take up to five years to complete after agreement is reached and the grid study may take just as long. It might also complicate the already difficult negotiations on the Nelson study.

As an alternative, we feel that it could be made the subject of a separate study. The problem lends itself to separate treatment since it can be defined within fairly narrow limits. In addition, the negotiations on the Nelson study might be facilitated if the provinces concerned were assured of the feasibility of increasing the flow in the basin, if and when required. The results of the evaluation could be turned over to both the group set up to direct the Nelson study and the group responsible for the grid study.

Since international as well as interprovincial waters are involved, I think it would be appropriate for your department to undertake the study. If you feel, however, that all the provinces concerned should be involved, my government would be prepared to co-operate fully.

In the meantime, we feel that our advisers have examined this sufficiently to urge that the Columbia Treaty should not be ratified without reserving the right to divert a reasonable portion of the flow into other basins in Canada. As the treaty now stands I understand it would prevent any diversion for at least sixty years. By allowing downstream development to establish claims to the water it might make diversion after the expiration of the treaty essentially impossible. If diversion from the Columbia is feasible and required in the future to meet increasing demands in the prairie region, the choice might become one of using the entire flow of the Columbia for power generation in B.C. and the U.S. or diverting a small portion of this flow into the Saskatchewan to satisfy basic consumptive needs. Water so diverted might generate just as much power in the course of its passage to Hudson Bay as it would en route to the Pacific; but the whole of it would be generated in Canada in the one case while about half of it would be developed in the U.S. in the other.

I would appreciate having your comments on this at your earliest convenience. If you would like to have your staff examine the results of our preliminary examination of this matter I would be prepared to send you a copy of our consultants report on it.

Yours sincerely,

W. S. Lloyd.

cc Prime Minister J. G. Diefenbaker.

OTTAWA, June 28, 1962.

The Honourable Woodrow Stanley Lloyd,
Premier of Saskatchewan,
Regina, Saskatchewan.

My dear Premier:

Your letter of June 21st raises very important questions of policy relating to diversions of water from British Columbia and Alberta into Saskatchewan. They will require very careful consideration before I would wish to express any views.

As you are fully aware, the water resources within a province belong to that province. Any proposal for diversion of water from its natural course inside a province to cause it to flow out of it would be a matter of great concern to the province involved. Can you tell me whether you have raised with the other provinces concerned the possibility of water diversions and, if so, what their views are? In addition, it would be much appreciated if you would let me have a copy of your consultants' report on this subject.

Yours sincerely,

Walter Dinsdale.

PREMIER'S OFFICE

REGINA, July 24, 1962.

Hon. Walter Dinsdale,
Minister of Northern Affairs and
National Resources,
OTTAWA, Ontario.

Dear Mr. Dinsdale:

Thank you for your letter of June 28, 1962. I appreciate that my letter of June 21, 1962, raised a number of significant policy questions and that you will want to consider the matter carefully before commenting on it. At the same time, I feel that the matter is of some urgency, particularly in view of the pending ratification of the Columbia Treaty which I am led to believe could effectively preclude future consideration of certain diversions.

We have not raised this matter with any of the other provinces concerned, although, as you know, the possibility of certain diversions into the Saskatchewan system has been discussed for many years. Following receipt of the preliminary report of our advisers, it became apparent that not only inter-provincial but also international waters would be involved and in view of the over-riding concern of the federal government on the use of these waters, we felt that you should be appraised of our thinking first.

As in the case of the proposed Nelson study and the grid study, I feel that it would be most appropriate for you to raise this matter with the other provinces. At least four provinces as well as the North West Territories would be concerned in this and only the federal government could provide the initiative and leadership both to get a study under way and carry it through to completion. Furthermore, as I mentioned in my first letter, negotiations on the Nelson Study might well be facilitated by the results of a diversion study, if it established the feasibility of increasing the flow in the Saskatchewan basin as and when required.

As you requested, I am enclosing a copy of our consultant's report on this subject.

Yours sincerely,

W. S. Lloyd.

OTTAWA, July 30, 1962.

Honourable W. S. Lloyd,
Premier of Saskatchewan,
Legislative Building,
Regina, Saskatchewan.

Dear Mr. Lloyd:

In the absence of my Minister I wish to acknowledge your letter of July 24th and the attached *Report on a Preliminary Study of the Possibilities of Additional Water Supply for Saskatchewan Rivers*.

Mr. Dinsdale will be returning to Ottawa about the middle of August and I will bring this matter to his attention at that time.

Yours sincerely,
Edward M. Chalkman,
Executive Assistant.

OTTAWA, August 22, 1962.

The Honourable Woodrow Stanley Lloyd,
Premier of Saskatchewan,
Legislative Building,
Regina, Saskatchewan.

My dear Premier:

Thank you for your letter of the 24th of July 1962 and the copy of the "Report on a Preliminary Study of the Possibilities of Additional Water Supply for Saskatchewan Rivers", which you kindly attached. Officials of my Department have now had a chance to review this document and have paid particular attention to your concern regarding the effects of the Columbia River treaty. Based upon this review I can see no justification for withholding ratification of the Columbia Treaty so that possible amendments can be made to it to permit early diversions by Canada out of the Columbia River basin.

The economics of the Columbia River Treaty have been proven by detailed studies using what we consider are very conservative estimates of the benefits to be obtained. Any rights which Canada now possesses under the Boundary Waters Treaty of 1909 for diversions out of the Columbia River basin will be restored to Canada upon the termination of the sixty-year Columbia Treaty. It is interesting to note that intra-basin diversions permitted by the Columbia Treaty cannot be cancelled by unilateral action by either country. However, the Boundary Waters Treaty can be terminated by either country upon one year's notice.

The Crippen Wright report on additional water supply for Saskatchewan concludes that diversions of water from the Pacific watershed "are high in cost." This conclusion is reached using minimum interest rates and contingency allowances, and without any consideration of power losses on the Pacific streams, transmission costs, or cost-sharing of the Mica Dam. I am sure that a detailed analysis including these and other considerations would support my decision not to delay the ratification of the Columbia River Treaty.

I do, of course, appreciate the desirability of increasing water supplies to the Prairie Provinces, where the total supply as well as distribution is a vital matter to the future of the area. It is unfortunate that the suggested diversions of flow, if effected, in all probability will have net detrimental effects on the rivers whose flows will be reduced. These effects would need to

be carefully studied and compared to the benefits expected from the diversions. In such a study the co-operation of the affected jurisdictions would be highly desirable, if not essential.

As you are aware, the federal government and the provinces of Alberta, Saskatchewan and Manitoba have recognized the need for mutual and co-operative arrangements in the use of the limited supplies of water crossing the interprovincial boundaries through establishment of the Prairie Provinces Water Board. Based, in part, on impetus received from that Board considerable effort has been expended in an endeavour to institute a large scale Nelson-Saskatchewan River basin study.

I understand that in that proposed study, it was contemplated that some diversion possibilities, located within the jurisdictional areas of the participants, would be included. May I say that in so far as the study is concerned and so far as the federal government has jurisdiction, I am prepared to consider with the affected provinces a broad arrangement for such an investigation. Moreover, if British Columbia volunteered an interest to unite in a study of the possibilities of diverting some of its water through the Continental Divide, I consider that terms of reference could be developed to incorporate such study with the others.

In other words, if the affected provinces express a desire to broaden the presently contemplated study you will find me fully co-operative in developing mutually satisfactory arrangements.

Yours sincerely,
Walter Dinsdale.

PREMIER'S OFFICE

REGINA, August 31st, 1962.

Honourable Walter Dinsdale,
Minister of Northern Affairs and National Resources,
Ottawa, Ontario.

Dear Mr. Dinsdale:

This will acknowledge your letter of August 22nd. A number of my colleagues and some of our provincial agencies will be interested in studying the point of view which you have expressed.

Yours sincerely,

W. S. Lloyd.

PREMIER'S OFFICE

REGINA, May 14, 1963.

Hon. Lester B. Pearson,
Prime Minister of Canada,
Ottawa, Ontario.

My dear Prime Minister:

I have been greatly interested in the weekend news reports emanating from your meeting with President Kennedy at Hyannis Port and in particular to references to possible early negotiations between Canada and the United States in the Columbia River Treaty.

I should like to draw your attention to our interest and concern in any terms in the proposed treaty that might preclude future diversions from the Columbia and Kootenay Rivers into other basins in Canada and particularly into the Saskatchewan-Nelson basin. As the treaty now stands, we understand that it would prevent such diversions for at least 60 years. In effect, since downstream development in the United States would have time to establish a claim to this water, preventing diversion for 60 years could be tantamount to preventing diversions for all time.

We are interested and concerned in this matter because it appears that in spite of the best conservation of water, secured by the South Saskatchewan and other like projects, the Prairie Provinces face a water shortage that could become acute within the next thirty to fifty years. In view of this prospect our advisors and consultants have looked into the possibility of importing water into the Saskatchewan-Nelson system from other basins, including possibilities for augmenting flows in both the north and south branches of the Saskatchewan river and through the Qu'Appelle and Souris rivers into southern Manitoba.

Their preliminary findings indicate the probable feasibility of such diversions staged over a period of time as needs and economic factors dictate. One approach suggested is to divert waters now flowing northward into the Arctic southeasterly into the Saskatchewan-Nelson system. The Peace appears to be the largest single source of such water. In addition to this our consultants have examined several possible routes for diversion from the Columbia and Kootenay. Although more expensive, diversions from the Columbia and/or Kootenay appear to be the only direct means to augment the flow in the south branch of the Saskatchewan river. Hence, it might be necessary to undertake it prior to some of the others.

I drew this matter to the attention of the previous government in a letter to the Hon. W. Dinsdale on June 21, 1962, and I submitted to him a copy of our consultants' report. I am taking the liberty of attaching herewith a copy of the letter to Mr. Dinsdale and a further copy of the report.

You will note that after commenting on the results of our preliminary investigations I suggested a full and early study of the matter. Such a study would necessarily involve the governments of British Columbia and the Prairie Provinces as well as the Federal Government. It might be treated as a part of the comprehensive Saskatchewan-Nelson investigation, which the Federal Government has been negotiating with the Prairie Provinces, or it might be conducted as a separate investigation. In either case, in view of the overriding national interest and the possible international implications, I feel that the Federal Government should preferably initiate the study.

In the meantime, the Government of Saskatchewan would urge that the Columbia Treaty not be ratified without reserving the right to divert a reasonable portion of the flow into other basins in Canada. If diversion from the Columbia is feasible, it may well provide a means of alleviating what promises to become a most serious problem for the prairie region.

In your Government's forthcoming negotiations on this matter, I ask that this be one of the points considered for review and amendment.

Yours sincerely,

W. S. Lloyd.

OTTAWA, May 20, 1963.

My dear Premier:

I have your letter of May 14th and enclosures, in regard to the proposed Columbia River Treaty.

The representations you have made on behalf of your government will be brought to the attention of my colleagues for careful study and consideration.

Yours sincerely,

L. B. Pearson.

The Honourable W. S. Lloyd, M.L.A.,
Premier of Saskatchewan,
Legislative Building,
Regina, Saskatchewan.

PREMIER'S OFFICE

REGINA, August 21, 1963

Hon. Paul Martin,
Secretary of State for External Affairs,
House of Commons,
Ottawa, Ontario.

Dear Mr. Martin:

I have noted your recent statement in the House of Commons that the Columbia River Treaty makes provision for diversion of water from the Columbia River basin to the Saskatchewan River. This is contrary to the opinion expressed by our officials. In their view, the treaty as presently drawn would prevent any diversion of water out of the Columbia River basin for a period of sixty years. I am informed that this is a view which has also been taken by other authorities.

Naturally, I would be happy to find the right to divert water from the Columbia basin to the prairie region to be securely established under the treaty. It seems, however, that the treaty is capable of different interpretations. We are, therefore, anxious to have it established that the view which you have expressed on behalf of the Canadian government is also shared by the government of the United States. If this is so, the United States government should have no objection to having such diversion rights expressed more definitely in the treaty or in an attached protocol. I would urge that in the course of the forthcoming negotiations the Canadian government obtain such an assurance in written form from the United States government.

In addition, we feel that it is important to establish that diversion by Canada from the Columbia River basin into the Saskatchewan for consumptive uses will not be precluded simply because the water must flow through hydro power stations now established, or which may in the future be established, on the headwaters of the Saskatchewan system.

I would appreciate your comments, and additional assurance regarding the views of the federal government on this matter, at your earliest convenience.

Yours sincerely,

W. S. Lloyd

PREMIER'S OFFICE

REGINA, September 23, 1963

Hon. Paul Martin,
Secretary of State for External Affairs,
Ottawa, Ontario.

Dear Mr. Martin:

In the absence of any reply to my letter of August 21, I would like to again express my concern about provisions in the proposed Columbia River treaty which appear to preclude diversions from the Columbia basin into the prairie region for at least 60 years and possibly for all time.

I have reference to a press report of more than two months ago in which it was indicated that you were proposing to write to me to clarify what you felt to be an erroneous interpretation of the treaty on my part. I have not as yet received any communication from you on this matter.

You will be aware from previous correspondence that the Saskatchewan Government views this as a matter of both regional and national importance. Throughout the world the rapid increase in water consumption has made necessary long-range planning to meet future requirements. Even in Canada with its many streams and lakes very large expenditures have been necessary in order to assure sufficient and pure supplies of water. Experience has indicated that it is not sufficient to plan even for a generation ahead in this matter. It seems to me that this is particularly true for the prairie region where natural stream flows are limited in relation to population compared with other parts of Canada but where abundant additional reserves of water are at least technically capable of being diverted to augment natural flows.

As I said in my letter of August 21, I would be happy to find that the right to divert water from the Columbia basin to the prairie region is securely established under the proposed Columbia River treaty. There appear to be grave doubts, however, that this is so. Therefore, a formal statement by the federal government in the near future would be welcomed generally. It seems to me imperative that the federal government should press, if it has not already done so, for the establishment of the clear right of Canada to divert a portion of the waters of the Columbia River into the prairie region if such should become necessary over the next sixty years.

In view of the general interest in this question, I am releasing a copy of this letter to the press along with a copy of my letter of August 21.

Yours sincerely,

W. S. Lloyd

OTTAWA, October 3, 1962.

The Honourable W. S. Lloyd, B.A.,
Premier of the Province of Saskatchewan,
Legislative Building,
Regina, Saskatchewan.

My dear Premier,

I have been considering your letters of the 21st of August 1963 and the 23rd of September 1963 expressing your concern about the impact of the Columbia River Treaty on the possibility of diverting water from the Columbia River system for consumptive uses within your Province. I have had

the technical and other aspects of your concern looked into and am now in a position to reply to your letters.

At the outset let me say that I am at a complete loss to identify the provisions in the Columbia River Treaty, which, as you state in your first letter and repeat in the first paragraph of your second letter, "appear to preclude diversions from the Columbia basin into the prairie region for at least 60 years and possibly for all time" for consumptive as opposed to hydro-electric power purposes. Quite the contrary is the true situation. There are no provisions in the Columbia River Treaty which derogate from or purport to interfere in any way with Canada's right to use the waters of the Columbia River system in Canada for consumptive uses. These uses were intentionally defined in very wide terms. The definition is found in paragraph (e) of section

(1) of Article I of the Treaty, which reads as follows:

" "consumptive use" means use of water for domestic, municipal, stock-water, irrigation, mining or industrial purposes but does not include use for the generation of hydro-electric power;".

While I do not for one moment want to minimize the desirability of safeguarding adequate water supplies to meet the consumptive needs of the Prairie Provinces, I certainly would like to comment very briefly on the role which Columbia and Kootenay River waters may play in such a plan.

In March of 1962 the firm of Crippen Wright Engineering Limited produced a report for the Saskatchewan Power Corporation entitled "A Preliminary Study of the Possibilities of Additional Water Supply for Saskatchewan Rivers". The Summary of this report suggests that additional water supplies be developed in the following order:

- (a) Diversions within the Saskatchewan basin itself.
- (b) Diversions from the Athabasca River.
- (c) Diversions from the Peace River.
- (d) Diversions from the Kootenay, Columbia or Fraser Rivers. (Water from the Fraser River is the lowest in cost of these three.)

The reason for this order of development is quite apparent when the cost of water from the various plans is considered. The consultants' report shows Kootenay-Columbia water costing roughly double that of the Peace. When the value of lost hydro-electric generation on the Kootenay and Columbia Rivers resulting from the diversion is included, the cost increases to at least three times that of Peace River water. It would appear therefore that the Peace and Athabasca diversions would take place first.

The combined population of Alberta and Saskatchewan over the last thirty years has increased at approximately one per cent per annum. While this growth rate has increased to $2\frac{1}{2}$ per cent during the period 1951 to 1961 it would have to average roughly $3\frac{1}{2}$ per cent over the next 100 years or 6 per cent over the next 60 years to fully utilize the water supplies available from the Saskatchewan, Athabasca and Peace Rivers. I would suggest therefore, that even though there is nothing in the Columbia River Treaty to prevent consumptive diversions to the Prairies Provinces during or after the period of the Treaty, it is extremely unlikely that these diversions will be required for a considerable number of years after the termination of the Treaty.

I would repeat that the Columbia River Treaty expressly confirms and recognizes Canada's right to make diversions for consumptive uses. I have quoted the definition of consumptive uses above and it is these widely defined purposes that are referred to in Article XIII of the Columbia River Treaty, which reads in part as follows:

ARTICLE XIII

Diversions

(1) Except as provided in this Article neither Canada nor the United States of America shall, without the consent of the other evidenced by an exchange of notes, divert for any use, other than a consumptive use, any water from its natural channel in a way that alters the flow of any water as it crosses the Canada-United States of America boundary within the Columbia River basin.

(2)..."

It is quite clear from the underlined words that the provision against diversion from the Columbia basin except with joint consent does *not* apply to diversions for consumptive uses—and consumptive uses include the entire range of purposes defined in Article I (1) (e).

In so far as the attitude of the United States of America is concerned I would draw your attention to the formal record of the hearing before the Committee on Foreign Relations of the United States Senate on the 8th of March 1961 concerning ratification of the Columbia River Treaty, and in particular to the evidence of Lt. General Emerson C. Itschner, at that time Chief of Engineers, United States Army. In addition to his oral evidence General Itschner filed with the Committee a formal statement which is set out in the record of the hearings, starting at page 52. It read in part as follows:

"Except for diversion of the Kootenay River to the headwaters of the Columbia River as discussed below, Canada and the United States are each expressly precluded for at least 60 years, without the consent of the other from diverting for other than consumptive uses any water from the natural channel of the Columbia River or its tributaries if the diversion would alter the flow of water crossing the boundary. Consumptive use is defined to mean the use of water for domestic, municipal, stock-water, irrigation, mining, or industrial purposes, but does not include use for the generation of hydro-electric power. Thus, either country can use the waters of the Columbia River and tributaries for the consumptive uses even though this may alter the flow of a stream where it crosses boundary, without obtaining the consent of the other country."...

The subject matter of the Columbia River Treaty is the provision of storage facilities in Canada to regulate the flow of the Columbia River for electric power and flood control purposes. The codification of rights of diversion generally would have been out of place in this Treaty since they are already adequately and better expressed in international law generally and in the *Boundary Waters Treaty* (1909) specifically. What the Columbia River Treaty does, therefore, is to ensure that there is no derogation from or interference with our right to use the waters of the Columbia system in Canada for consumptive uses. As I have said, this is effectively covered in the Treaty as it now stands.

Yours sincerely,

PAUL MARTIN.

PREMIER'S OFFICE

REGINA, November 13, 1963.

Hon. Paul Martin,
Secretary of State for External Affairs,
House of Commons,
Ottawa, Ontario.

Dear Mr. Martin:

I welcome the assurance given in your letter of October 3, 1963, that you believe that the present Columbia River Treaty gives Canada the right to divert water for consumptive purposes from the Columbia River basin into the Saskatchewan River system. I feel, however, that it would be useful to explore means by which this right could be expressed more explicitly as the wording of certain clauses in the agreement would appear to throw some doubt on it.

I note your statement that you are "at a complete loss to identify the provisions in the Columbia River Treaty" which had seemed to preclude diversions from the Columbia basin into the prairie region. In this connection, I would refer first to the two clauses cited in your letter. Paragraph (1) of Article XIII reads as follows:

Except as provided in this article neither Canada nor the United States of America shall, without the consent of the other evidenced by an exchange of notes, divert for *any* use, other than a consumptive use, any water from its natural channel in a way that alters the flow of any water as it crosses the Canada-United States of America boundary within the Columbia River basin.

The definition of "consumptive use" is set out in paragraph (e) of section (1) of Article I of the Treaty and reads as follows:

"...*"consumptive use"* means use of water for domestic, municipal, stock water, irrigation, mining or industrial purposes *but does not include use for the generation of electric power.*"

My advisers have suggested that the difficulty with these two paragraphs is that one cannot conceive of a diversion of water from the Columbia basin into the Saskatchewan system that could or should be confined to consumptive uses. Although the main objective of any diversion would be to provide water for consumptive uses, the water diverted would necessarily flow through hydroelectric installations and would thus be said to be used for power generation. The water could conceivably be used for other purposes not identified in the Treaty as "consumptive uses" before reaching the point of ultimate consumption. Even then there might be room for argument whether the diverted water was ultimately used for consumptive purposes or was instead used, for example, to maintain water levels for adequate pollution control which, like power generation, is not listed as a consumptive use.

There are other paragraphs in the Treaty which appear to throw some doubt upon Canada's right to divert water from the Columbia into the Saskatchewan. For example, the interpretation of paragraph (5) of Article IV might so restrict the way in which a diversion scheme could be operated as to make it unfeasible. This paragraph reads as follows:

"Any water resource development, in addition to the Canadian storage, constructed in Canada after the ratification date shall not be operated in a way that adversely affects the stream flow control in the Columbia river within Canada so as to reduce the flood control and hydroelectric power

benefits which the operation of the Canadian storage in accordance with the operating plans in force from time to time would otherwise produce."

If it was and is the intention of the Canadian government to secure Canada's right to divert Columbia water into other basins, then I feel that in the continuing negotiations on the Treaty, it would be desirable to seek amendments which would eliminate any possibility of doubt and any possibility that future attempts to divert water from the Columbia basin into the prairie region could be effectively blocked by litigation by the United States. In my view, the statement by Lt. Gen. Itschner, to which you refer, does not provide any assurance that such amendments are unnecessary. His statement is essentially a paraphrasing of the relevant section in the Treaty and is subject to the same construction as might be placed on the Treaty.

I note your statement that, "The codification of rights of diversion generally would have been out of place in this Treaty since they are already adequately and better expressed in international law generally and in the Boundary Waters Treaty specifically." I find it difficult to agree with this in view of paragraphs (1) and (2) of Article XVII of the Treaty which state that neither presently existing international law nor the Boundary Waters Treaty will apply to the waters of the Columbia River basin during the term of the Treaty. The specific reference in paragraphs (3) and (4) of Article XVII to Article II, of the Boundary Waters Treaty seems to indicate clearly that Canada's right under the Boundary Waters Treaty to divert water from the Columbia River Basin will be surrendered under the Columbia River Treaty and that any continuing rights will be dependent on the terms of the latter Treaty. In view of this, it is all the more important that Canada's right to divert from the Columbia basin should be expressed in the Columbia Treaty in such a way that it might not be successfully challenged in the future.

We recognize, as you point out, that the Columbia River system does not represent the only source of additional water for the prairie region. We also recognize that it may not represent either the largest source or the least expensive source. On the basis of our very preliminary studies to date, however, the Columbia diversion appears to be the only direct means to augment substantially the flow in the south branch of the Saskatchewan river. The importance of this lies in the fact that it is anticipated that the greater part of the increasing demand for surface water in the prairie region will have to be supplied from the south branch.

As you know, the Saskatchewan government has for some time now been urging that the Governments concerned undertake a comprehensive study both of the water resources of the Saskatchewan-Nelson basin and of means to augment prairie water supplies through diversions, including the Columbia diversion. We feel that it would be most unwise to in any way restrict Canada's existing rights to develop and use Columbia waters until such a study has been completed. In this regard, we welcomed the recent statement by the Hon. A. Laing in his address to the Saskatchewan Rivers Development Association.

Yours sincerely,

W. S. Lloyd.

OTTAWA, December 4, 1963.

The Honourable W. S. Lloyd,
Premier of Saskatchewan,
Regina, Sask.

Dear Premier Lloyd:

I have your further letter of November 13 concerning the Columbia River Treaty and the question of diversion of water for consumptive purposes. I have gone into the points it raises with some care with our legal advisers and I am afraid I cannot agree with the general argument in your letter that the Treaty is unclear or inadequate with regard to the questions that concern you.

At the outset it is important to appreciate that the Columbia River Treaty has to a large extent carved out a special legal régime in relation to the development and control of the water resources of the Columbia River basin for the period during which the Treaty remains in force. However, as I indicated in my previous letter this special legal régime is not an exclusive or exhaustive statement of one important area, namely the area concerned with diversions of water for consumptive uses.

Turning to the specific point raised in the second paragraph of your last letter I must say that I do not see how paragraph 1 of Article XIII of the Treaty can be read to support the suggestion of inadequacy. The plain language of the paragraph does not admit of any meaning other than that diversion for consumptive use is not only excluded from the prohibition but also, by clear implication and necessary intentment specifically authorized.

I cannot see any inconsistency in the confirmation and recognition of the right of Canada to divert water for consumptive uses as contained in paragraph 1 of Article XIII and the language of paragraph 5 of Article IV referred to by you on page 2 of your letter. These provisions of Article IV which deal in general terms with the construction of a water resource development in Canada must be read in the context of the Treaty as a whole and particularly in conjunction with the rights of the diversion granted, confirmed and recognized in Article XIII.

With respect to the matter of the definition of "consumptive use", the question whether a diversion is being made for a consumptive use or for hydro-electric power production or flood control is a question of fact to be determined having regard to all the circumstances surrounding the proposed diversion. While the application of the definition to the bulk of contemplated diversions raises no problem I appreciate that in its application to some possible schemes of diversion the problem of proper characterization of the diversion would arise. Such possibility does not reduce the value of the definition generally but merely acknowledges the inherent problem of any definition drafted in the abstract when the time comes to apply it to a specific situation.

I am sure you will appreciate that it would have been impractical, as it is impractical now, to have asked the United States Government to enlarge the definition so as to include hydro-electric power generation. The essential purpose of the Treaty is the establishment of an agreed régime under which the flows of the Columbia River are preserved and controlled for hydro-electric power production and flood control in the Columbia River basin for the period of the Treaty, subject to diminution for consumption only. It would obviously conflict with the purpose to have a general provision for diversion for hydro-electric power generation. In this connection I should point out that the mere fact that the diverted water produces electric power as a necessary incident of a diversion for, say, irrigation, would not, in the view of our ad-

visers, change its characterization for the purpose of the definition from one carried out for consumptive use to one carried out for hydro-electric power production.

I cannot agree with your view of the purpose and effect of Article XVII of the Treaty as stated on page 3 of your letter. Moreover, it may be that there has been a failure to appreciate that this Article has a special value and significance for Canada. Its purpose is to ensure that if the United States of America chooses to terminate the Boundary Waters Treaty, which it has every right to do on one year's notice, nevertheless under this Article such termination does not affect the rights of diversion granted to Canada by Article II of the Boundary Waters Treaty qua the Columbia River Basin for, at the minimum, the duration of the Columbia River Treaty plus one year's notice. Also, while Article XVII makes clear in general terms that the Boundary Waters Treaty is in effect subject to the Columbia River Treaty insofar as the regulation of the Columbia River Basin is concerned, excepting always the matter of water diversions for consumptive uses, the Article does not in any sense terminate the Boundary Waters Treaty.

This letter is, I am afraid, unduly long, but the questions you have raised are of importance and I am sure that you want a thorough assessment of them.

Yours sincerely,

Paul Martin

PREMIER'S OFFICE

REGINA, December 16, 1963.

Hon. Paul Martin,
Secretary of State for External Affairs,
House of Commons,
Ottawa, Ontario.

Dear Mr. Martin:

Thank you for your letter of December 4, 1963 concerning the Columbia River Treaty.

The wording of your letter and, in particular the second and last paragraphs on page 2, appear to entirely justify both our concern regarding the possible effect of the Columbia Treaty on Canada's right to divert into the Saskatchewan system and our suggestion that a section be added to the Treaty that would remove any possibility of doubt regarding this right to divert, not only according to Canada's interpretation of the Treaty but also according to the American interpretation.

Certainly, it would be extremely unfortunate to find that a particular proposed diversion into the Saskatchewan system would not, "having regard to all the circumstances surrounding the proposed diversion", be deemed to fall within the definition of "consumptive use". The tendency of American authorities might well be to interpret this definition as narrowly as possible.

In this day of large-scale, expensive water projects, economic feasibility almost invariably hinges on "multiple-use" including hydro. This would be particularly true of a major diversion project. The benefits from all of the uses to which the diverted water might be put may justify the costs of such a scheme. The benefits from consumptive uses alone might never cover the costs. It seems to me that the time to eliminate any possible doubt on this matter is now before the Treaty is actually signed.

May I, therefore, repeat the questions which I have referred to in my last three letters.

1. In the event that 10 or 20 years from now it was decided to divert water from the Columbia into the Saskatchewan for consumptive and non consumptive uses, and that this water was to flow through a series of hydro plants between the Rockies and its point of use in Saskatchewan or Manitoba and the surplus was to flow on to Hudson Bay, is there anything in the Columbia Treaty in its present form that could prevent it?

2. Has the Government of Canada ascertained the views of the American Government on this matter and are they the same as the views of the Canadian Government?

3. If not, will the Canadian Government ascertain the views of the American Government on this matter before the Treaty is signed?

I would appreciate an early reply to these questions.

Yours sincerely,

W. S. Lloyd.

REGINA, Saskatchewan

The Honourable Paul Martin

Secretary of State for External Affairs, Ottawa, Ont.

Could I be informed whether changes in Columbia River Treaty provide assurance of affirmative answer to question number one contained in my letter to you under date of December Sixteenth?

W. S. Lloyd, Premier of Saskatchewan.

The Honourable W. S. Lloyd,

Premier of Saskatchewan.

Regina (Sask). Ottawa January twenty-four.

Reference your telegram of January twenty-three and our earlier correspondence. Para (1) of Protocol reaffirming para 1 of Article XIII of treaty states positively right to divert water from Columbia basin for consumptive use such as irrigation. Fact that quantity of water genuinely destined for this purpose might incidentally be used to produce power enroute would not disqualify particular diversion.

2. Diversion primarily for a non-consumptive use such as power production would of course be different matter. At very great benefit to British Columbia and rest of Canada Columbia water flow is to be regulated under treaty arrangements to produce power downstream an dlarge quantities in Columbia basin in Canada. I am sure you would recognize that during period of this mutually beneficial arrangement it would be unreasonable to expect to be able at same time to use same water for same purpose elsewhere.

3. Impossible of course to say categorically in advance whether this or that hypothetical diversion might be challenged. As would be true even without the treaty, much would depend on circumstances of each case. However, there is no question whatever of our right to make diversion at any time for consumptive use on very broad basis defined in treaty and protocol.

4. Arrangements now proposed are in accord with wishes of the province where the river is located and will be highly beneficial to whole country.

5. You are, of course, aware of the many alternative diversion possibilities dealt with in 1962 report of Crippen Wright Engineering to your power corporation.

Paul Martin.

PREMIER'S OFFICE

REGINA, January 27, 1964.

The Honourable Paul Martin,
Secretary of State for External Affairs,
Ottawa, Ontario.

Dear Mr. Martin:

The contents of your wire of January 24th serve to completely confirm Saskatchewan's position that any effective and economically feasible diversion of the Columbia River into the South Saskatchewan River system is prevented by the treaty. It does this because, according to your wire, any use of such diverted water for power production other than in an "incidental" way would be a breach of the treaty. Indeed, you suggest that you cannot be sure in advance that *any* particular diversion would not be challenged.

It is obvious that power production would have to be an integral rather than an "incidental" part of any river diversion of this magnitude. As a result, I can only continue to conclude that the proposed treaty will in fact deny any possibility of the use of the water so far as people of the prairie provinces are concerned.

Yours sincerely,
W. S. Lloyd.

OTTAWA, January 30, 1964.

Dear Mr. Lloyd:

Through a series of letters and telegrams I have tried to deal in a responsible way with the different questions which you have raised from time to time about possible diversions of Columbia River water to the Prairies. Your latest letter of January 27, however, indicates that you are determined to hold to your original preconceptions, despite the clear language of the Treaty and Protocol, despite the full explanations which I have provided, and even despite the advice of your own Power Corporation's engineering consultants regarding the relative advantages of various diversions.

In your latest letter you have misinterpreted what I had said in my most recent message.

In order to be completely accurate I had stated that it is "impossible, of course, to say categorically in advance whether this or that hypothetical diversion might be challenged. As would be true even without the Treaty, much would depend on the circumstances of each case". This lack of absolute certainty regarding future cases is not a matter that depends on Treaty wording. Even the judges of our courts do not attempt to say *in advance* what will be the situation under any given principle or law without knowing precisely what circumstances they are considering. I went on, however, to make it perfectly clear that there is no doubt at all with regard to any diversions that are clearly for consumptive purposes. I said "there is no question whatever of our right to make diversion at any time for consumptive use on very broad basis defined in Treaty and Protocol". In effect, I simply acknowledged that, with or without the Treaty, *some* particular diversion might possibly be challenged. You, however, have interpreted this to mean that "you cannot be sure in advance that *any* particular diversion would not be challenged" (your underlining). That is not so and I did not say or suggest it.

You also make a great deal out of an assumed incompatibility between the words "incidental" and "integral". To my mind, the fact that a use of a diversion for power is "incidental" to a consumptive requirement would not prevent it from being "integral" or large.

These are matters which deserve to be taken seriously and not made into debating points, since both of us have a duty to promote the welfare of our fellow citizens. It was in that spirit that, along with the Government of British Columbia, we negotiated the beneficial arrangements for developing the potential of the Columbia River. I would hope that in the same constructive spirit you might review our correspondence and related documents. If you do so, I am confident you will find that every precaution has been taken to protect the interests of the people of the Prairie provinces, while at the same time achieving an agreement that is greatly to the advantage of the people of British Columbia and of Canada generally.

The Hon. W. S. Lloyd,
Premier of Saskatchewan,
Regina, Saskatchewan.

Yours sincerely,

Paul Martin.

PREMIER'S OFFICE

REGINA, February 21, 1964

Hon. Paul Martin,
Secretary of State for External Affairs,
House of Commons,
Ottawa, Ontario.

Dear Mr. Martin:

The matters which have been raised in our correspondence concerning the Columbia Treaty of course deserve to be taken seriously and not made into debating points, as you state in your letter of January 30. May I add that the need to augment water supplies in the South Saskatchewan basin within the foreseeable future, and for all uses, also deserves to be taken seriously and questions bearing on this should not be dismissed as being mere debating points, by anyone responsible for the national interest.

We are extremely concerned about this because everything points to the fact that unless steps are taken to augment the supply of surface water to the southern part of the prairies, the limited natural supply will ultimately determine the ceiling of economic development in this region. This is the situation today in several smaller basins adjacent to the South Saskatchewan and we are proposing to divert water from the South Saskatchewan into those basins to overcome the deficiencies in natural runoff. It is only a matter of time before the South Saskatchewan will not be able to satisfy all of the demands on it. This was the ready consensus of the federal-provincial meeting on water resources held in Regina on December 20, which was attended by ministers from the three prairie provinces and the federal government.

You suggest that in commenting on the Columbia I have ignored the advice of our engineering consultants regarding the relative advantages of various diversions. This is, of course, quite incorrect. In my letters to you I have stated clearly that our concern about Canada retaining its existing right to divert the Columbia stems from two facts: first, that the earliest and greatest need for additional water will occur in the South Saskatchewan basin;

and second, that a Columbia diversion appears to be the only direct means to augment substantially the flow in the south branch of the river. You have yet to comment on this.

It is true that our consultants, G. E. Crippen and Associates, identified other alternatives for augmenting the Saskatchewan system, but they viewed a Columbia diversion of major importance to the south branch. May I quote from a paper prepared by Messrs. Crippen and Stephen and delivered to the Saskatchewan Resource Conference on January 20, 1964.

The (Columbia) Treaty requirements would introduce problems in the diversion of waters from the Columbia River, which is unfortunate since the great value of an upper Columbia diversion is, of course, that the waters can be directly routed to the South Saskatchewan River by way of the Bow River or via the North Saskatchewan and the Rocky Mountain House diversion.

You have also yet to comment on the real basis of our concern regarding those provisions in the Treaty and Protocol which govern diversions. We know, as you repeatedly state, that the Treaty says that diversions that are clearly and exclusively for consumptive uses, as defined in the Treaty, may be permitted. The Protocol confirms this, but it adds nothing to make this right meaningful insofar as the Prairies are concerned.

There is a vast difference between the stated rights in the Treaty and the practical and economic feasibility of exercising those rights as further qualified by the Treaty. The diversion of a part of the Columbia to the south branch of the Saskatchewan river, as I have said in previous letters, is a practical proposition if, and only if, hydro power generation can be an integral and key part of it. The economic feasibility of such a major project would turn on the multiple use of the water. A project combining power, irrigation, municipal and industrial water and other uses would justify the heavy costs involved. A project for consumptive uses, with power generation only "incidental", would not begin to justify the costs.

So far as the Prairies are concerned, then, a right to divert only, or primarily, for consumptive uses is no right at all. It can't be exercised.

Even if the economics of water development did not preclude it, any attempt to exercise the right as now stated in the Treaty could lead to interminable international argument. You raised the question of whether power generation would be an "incidental" or "primary" use. Other questions could be raised about the Treaty definition of consumptive use. For example, does it include industrial use where it is not a material of production but simply a means of production such as cooling water for turbines; does it include water diverted into a third or fourth basin, such as the Qu'Appelle and Assiniboine; does it include water needed to maintain a sufficient flow to prevent river pollution? When the increasing use of water in the Prairies reduces the flow at Squaw Rapids, Grand Rapids and other hydro sites, would the Treaty permit diversions to bring the flow at these points back to normal? In other words, would replacement of water already used be a consumptive use? The Treaty is not clear on any of these questions. The natural tendency of the Americans would be to define consumptive use as narrowly as possible. Who is to decide?

You say that there is no way of being absolutely sure in advance whether this or that diversion might be challenged. Perhaps not absolutely certain but there is a way to be reasonably certain and that is to provide explicitly in the Protocol that multi-purpose diversions from the Columbia into the Saskatchewan will be permitted. This is what we asked you to do and what we now ask you to do before the Treaty is ratified.

Apart from everything else, it would seem particularly unwise to restrict Canada's existing rights to use Columbia water until the study of the water resources of the Saskatchewan-Nelson basin has been completed. Following upon the federal-provincial meeting in Regina on December 20, it now appears that this study will get under way in the near future. It is to include an examination of means to augment supplies in the basin.

Finally, I would like to refer to the Canada-B.C. Agreement on the Columbia, dated July 8, 1963, which I understand was made public at the time of the Treaty signing on January 22, 1964. In reading this document we were surprised to find that it contains the following clause:

2. All proprietary rights, title and interests arising under the Treaty and particularly those with respect to

(f) rights of water diversion granted to Canada by Article XIII of the Treaty

belong to British Columbia *absolutely for its own use.*

Unless this clause is qualified by some other clause or document, it appears to be completely in conflict with your repeated assurances over the past few months. I would appreciate your comments on it.

Yours sincerely,

W. S. Lloyd.

PREMIER'S OFFICE

REGINA, March 5, 1964.

Hon. Paul Martin,
Secretary of State for External Affairs,
House of Commons,
Ottawa, Ontario.

Dear Mr. Martin:

My attention has been drawn to an error in my letter to you of February 21, 1964.

On page 4 of the letter I referred to the Canada-B.C. Agreement on the Columbia, dated July 8, 1963, and I stated that I understood that this Agreement was made public at the time of the Treaty signing on January 22, 1964. I am now informed, however, that the Agreement was in fact made public last July.

Would you kindly accept this correction of my letter.

Yours sincerely,

W. S. Lloyd.

OTTAWA, March 31, 1964.

Dear Premier Lloyd:

COLUMBIA RIVER TREATY

Since receiving your letters of February 21 and March 5, 1964, I have taken the occasion to review the entire correspondence on this subject from the time of your letter of June 21, 1962 to the Honourable Walter Dinsdale.

I feel satisfied that this correspondence deals fully with all of the points you have raised, shows a proper regard for the position of the Province where the river is located, and provides answers to your questions which are as complete as can be given at this point in time. In particular, my letters have discussed at some length the terms of the Columbia River Treaty and Protocol relating to diversions.

The Canadian Government is fully aware of your concern with respect to water supplies in the South Saskatchewan River Basin and the anticipated use which you see for water in the development of the economy of Saskatchewan. Shortly put, our view is that alternative sources exist for obtaining water supplies for the Saskatchewan River system which, on any foreseeable basis, are considerably less expensive to develop than a Columbia River diversion into the South Saskatchewan.

We are satisfied that the national interest requires the ratification of the Columbia River Treaty and that the economic development of the Province of Saskatchewan will not be hindered in any way by the Columbia River Treaty. On the contrary, Saskatchewan will share with other parts of Canada in the substantial economic benefits which will flow from these arrangements.

On April 7, 1964, I will appear before the Standing Committee on External Affairs to commence the Government's presentation of the Columbia River Treaty and Protocol when I shall no doubt be dealing again with some of the points discussed in our correspondence.

The Honourable W. S. Lloyd, M.L.A.,
Premier of Saskatchewan,
Parliament Buildings,
Regina, Saskatchewan.

Yours sincerely,

Paul Martin.

APPENDIX "B"

CORRESPONDENCE BETWEEN GENERAL A. G. L. McNAUGHTON
AND THE
DEPARTMENT OF EXTERNAL AFFAIRS—1963-64

Preliminary Remarks

By A. G. L. McNaughton

At Meeting, 18 July, 1963

There are a great many details still to be resolved before the Columbia River Treaty can be considered acceptable to Canada. But in the heat of discussion over these details, too many people have overlooked the basic purpose of the treaty, which, for Canada, is to secure the best possible development of the Canadian section of the Columbia basin. The U. S. has developed its section in its own way. Our *essential* objective must be to develop our section in our *own* best interest, *then* share with the U. S. the added benefits that stem from cooperative use of the water.

These priorities are clearly reflected in the instructions given by the respective governments to the I.J.C. in Jan 1959, but in the Preamble to the draft treaty, the particular interest of Canada has been subordinated by making the overall advantage of the basin the predominate motive.

No treaty on the Columbia can serve Canada effectively unless it satisfies the following three principles:

1. As much of the water which is stored in Canada as possible must be stored at as high an elevation as supply permits. This follows the best physical use of this resource for both countries and provides the most flexibility for all time to adapt to changing needs as these needs develop. (The first of these will be an increasing need for irrigation).

2. Control of the waters stored in the Canadian part of the basin must remain in Canadian hands, just as the U. S. insists, rightly, on complete control of its flows.

3. Over and above the development that each country does for itself, the further benefits that can be achieved by cooperative effort must be shared equitably.

THE EXISTING DRAFT TREATY OFFENDS THESE PRINCIPLES IN ALMOST EVERY ARTICLE. Just to name a few instances:

On Principle 1. Storage at the highest elevations means the fullest use of reservoirs at Mica and Bull River-Luxor. The draft treaty does precisely the opposite by placing most of the storage along the U. S. border in High Arrow and Libby, which are at the lowest possible points available.

On Principle 2. Control of the Kootenay flows is placed *entirely* in U. S. hands because Libby is in U. S. territory and Canada has no right under the treaty draft to control the outflow.

Control of the Columbia River flows is placed *effectively* in U. S. hands by (1) physically locating High Arrow at the border where it is of little use to Canada, and (2) making the criterion of operation of Canadian storage the optimization of benefits for the entire system and by requiring joint approval of any operating plans that depart from system optimization. (This gives the U. S. a veto over anything we do in our storages. We have no such influences over U. S. operation of their storages).

On Principle 3. The recompense we are to receive under the draft treaty is far from equitable either for flood control or power.

For flood control, \$64 million is the payment for a service that would cost the U. S. \$700 million to perform itself.

For power, we receive only 40% of the downstream benefits and even this amount declines over the years while the actual value of our storage to the U. S. actually increases.

Most of the specific criticisms which I have made of the treaty stem from these major violations of the rights of Canada and from the inequitable division that is proposed of the benefits of the Columbia development.

OTTAWA, August 6, 1963

Dear General McNaughton:

I want to tell you how much I have appreciated the assistance you have provided to me during the three discussions on the Columbia River Treaty which have been held in my office during recent weeks. The development of the Columbia River for hydro-electric power and flood control protection is of course a very technical and detailed subject, and having the benefit of your opinions has greatly assisted me in orienting myself.

On a subject of such complexity and concerning which there are so many divergent interests, it is inevitable that there will be bona fide differences of opinion among those who are genuinely seeking to move forward the best interests of our country. In the result an international agreement will reflect a composite of views rather than all the ideas of any single individual.

Your opinions on the Columbia River Treaty quite rightly carry a great deal of weight, not only with myself but throughout this country. It is for this reason that I am deeply concerned over your criticism of some of the provisions of the Treaty. On the basis of what has been stated at our meetings I would like to summarize very briefly some of your major objections to the Treaty and then set out comments and questions on what actions might possibly be taken in this regard.

The paper which you distributed at our meeting on the 18th of July dwelt on three basic issues. The first of these concerned the problem of what projects should be constructed in the Columbia River basin in Canada. You objected to the Treaty projects of High Arrow and Libby and suggested as an alternative the Bull River-Luxor projects in the Upper Columbia and East Kootenay Valleys. This is a suggestion which has of course received a great deal of attention and which was debated in detail during the Treaty negotiations themselves. The problem associated with such a suggested change of projects, aside altogether from the conclusions of engineering firms which support the High Arrow development, is the problem of jurisdiction. From the records which are available, it would appear that the Province of British Columbia, which under the British North America Act has jurisdiction over the water resources of that Province, considered the alternatives and then selected the present Treaty projects for inclusion in a co-operative plan of development. You yourself have testified that once the responsible government has reached a decision that a certain project cannot be built, it is idle exercise to go on considering it. This would now appear to be the case with the Dorr, Bull River-Luxor reservoirs and, in the absence of any indication from the Province that they are prepared to reconsider their decision, I can see no practical alternative but to accept it. We can of course prevent objectionable developments of the Columbia River through our powers under the International River Improvements Act. However, on the basis of engineering evidence we would have no reasonable basis for doing this in the case of High Arrow. Moreover, while we can prevent certain developments we cannot insist that others should take place. I would certainly like to hear your views as to what action you would take in this problem of

project selection. And perhaps you would also wish to consider whether the additional benefits achieved by such alternative projects are not secured at a cost so high that their value is dubious, as compared with the cost of an equivalent amount of power from other sources.

The second point covered by your paper of the 18th of July dealt with control of Canadian storages. In this instance we know that three separate engineering studies by respected engineering firms have concluded that the Treaty does protect Canada's freedom of operation to make the best use of Columbia River water within Canada. These studies perhaps interpreted certain sections of the Treaty more favourably than you do, so the question which remains is, if the interpretation used by the consultants is definitely established by a Protocol to the Treaty, do you accept the findings of these engineering firms and if so does this fully meet your concern in this regard? May I add that I think you place altogether too much stress on the role of paragraph 3 of the Preamble and give it an interpretation unfavourable to Canadian interests that, in my opinion, and seemingly in Professor Cohen's opinion, it does not warrant.

The third and last point set forth in your paper concerned the downstream benefits to which Canada is entitled under the Treaty. First, with regard to the flood control payment of \$64.4 million, this payment cannot in all fairness be compared with costs of \$700 million in the United States to provide the same service. The \$700 million investment by the United States would provide not only the flood control benefits, but also power benefits equivalent to those provided by Canadian storage. United States sources indicate that with the addition of the Bruces Eddy and Knowles projects in the United States, the flood control payment to Canada called for under the Treaty is equal to roughly 100% of the flood damage prevented by Canada storage (beyond that which would have been prevented by the increased United States storage) rather than the 50% called for by the I.J.C. Principles. Whether or not this is true, conditions certainly are changing and nearly all of these changes make it even more difficult to consider United States acceptance of substantial increases in Treaty benefits to Canada. Can you tell me whether language in the Protocol indicating some reasonable limitations on the use of Canadian storage for flood control purposes, under the present Treaty, would meet at least some of your concern on this point?

Your statement that Canada receives only 40% of the power benefits from the Treaty is difficult for me to comment on, as the wording of the I.J.C. Principles and the Treaty seem so similar in this respect. The Principles call for division of power benefits as such without getting involved in the value of power to either country and the Treaty follows this approach.

I realize that the aforementioned three points do not fully cover all your criticism of the Treaty, but as you have noted, most of your specific criticisms stem from these points and are therefore covered indirectly if not directly. I feel that we may be able to meet some of your concern on these aspects, but with regard to others, particularly those which concern aspects outside of the jurisdiction of this government, it may be that the final decision will have to be between adjustments in the present Treaty by way of a Protocol or no Treaty at all. As no studies apparently exist which show the Columbia development within Canada to be a viable proposition at this time without international co-operation, a decision which made a Treaty impossible would be a most serious matter. The loss of employment possibilities and other economic gains now and over the longer future is a matter of great concern. However, this is a question on which we must take a decision and it is for this reason that I am particularly indebted to you for being so co-operative in providing both time and effort so that I may be fully aware of all facets of the problem.

Now that I have had an opportunity personally to survey the entire length of the Columbia River, as well as the Kootenay in Canada and the sites of all the Treaty storages as well as the existing and planned U.S. facilities, I am more than ever impressed with the potential value of this great development. I do believe that co-operation in its execution, as contemplated by the Columbia River Treaty, is capable of providing benefits to both countries that are greater than either could achieve without co-operation. I have reason to believe that it will be possible to secure modifications and clarifications of the Treaty by means of a Protocol that will meet some of your criticisms as well as deficiencies that I and my colleagues saw in the original Treaty. When the Protocol is signed, I hope you will feel that the arrangement as a whole merits your support. In a sense it is a tribute to your own perception and perseverance, embodying as it does the revolutionary concept for which you were in large part responsible—the sharing of downstream benefits between the two countries.

Once again, my warm thanks for your help.

Yours sincerely,

Paul Martin

General the Honourable A. G. L. McNaughton
Fernbank Road
Rockcliffe Park Village
Ontario.

August 22, 1963

The Hon. Paul Martin, P.C. M. P.,
Secretary of State for External Affairs,
East Block,
Ottawa.

Dear Mr. Martin,

Further to my note of 12 August 1963 in which I acknowledged receipt of your letter of 6 August 1963, which had then just reached me.

In the meantime, I have made opportunity to review available information in respect to the various matters and queries which you have raised, and to consider again the conclusions which I have previously drawn therefrom.

I think I should say frankly that I remain firmly convinced of the superior merit of the I.J.C. plan Sequence IXa for the development of the Columbia and the paramount necessity that the physical and jurisdictional control of the flow from the Canadian reservoirs and the determination and the allocation of the downstream benefits therefrom to power and flood control be brought back into accord with the principles presented by the I.J.C. in the report to Governments of 29 December 1959 setting out the principles which should govern these matters.

The basic reason why the right of Canada to control our own waters within our own territory must be maintained, free of servitude, is set forth and explained in my Article in the 1963 Spring Issue of the *International Journal*, a copy of which I sent you.

In the course of the last several days, I have gone over the matters mentioned in your letter and I have reached the conclusion that the information required is given comprehensively in my article in the *International Journal* and I confirm that this article correctly presents my views on the several points.

Therefore I think that what is required of me is that I should respond to your question as to what I would myself do in existing circumstances.

I recall that the engineering consultants appointed by the British Columbia Government appear to have been given terms of reference strictly confined to the Treaty projects only. At any rate, their published reports do not embrace the alternatives, and in particular the very great advantages to Canada which I consider we would secure from sequence IXa are not reflected in their presentations.

I consider that this is an extremely unsatisfactory position for the *responsible* Government on the eve of decision.

I would therefore, and at once, before entering into any further commitment, whether by Protocol or otherwise, appoint an independent consultant and call for a report to include the alternatives not yet included in consultant studies—specifically, the sequence IXa alternative.

I am confident that such a study will endorse the full diversion to the Columbia and provided this plan is thus confirmed, I would forthwith reject High Arrow and Libby and declare that any plan for the development of the Columbia, to be acceptable to the Government of Canada will include the Dorr Bull River-Luxor storages in the East Kootenay.

My reason is that it is these high-altitude storages which provide the flexibility which is essential in the operations for flood prevention and power production, and which position the stored waters of Canadian origin where they will remain under the physical as well as the jurisdictional control of Canada.

I would also direct that a public hearing under the International Rivers Improvement Act be held in the Arrow Lakes and Windermere areas so that the Government may ascertain at first hand the views of the people of these regions. Surely it is a requirement of simple justice that the people most affected shall be heard from before any definitive negotiation is entered into.

Very sincerely,

A. G. L. McNaughton.

OTTAWA, September 10, 1963

Dear General McNaughton:

Thank you for your letter of the 22nd of August in which you reply to my letter of the 6th of August. Once again I wish to thank you for the time and effort which you continue to devote to explaining your interpretation of the points which we put before you concerning the Columbia River Treaty.

My letter of the 6th of August dwelt on the three basic objections to the Treaty which you gave to me at a meeting in my office on the 18th of July. You have provided a direct answer to my queries on the first of these points, that involving the proper selection of Treaty projects; have indirectly replied to the second point, control of Canadian storage; but do not seem to have touched on the last point which was a comparison of a \$700 million investment in the United States to the \$64.4 million flood control payment to Canada under the Treaty. Perhaps the best way to answer your recent letter is to review these points once more in the light of the opinions expressed in that letter.

Your letter suggests that the Government of British Columbia, the Government responsible for final project selection, did not have a competent study of all the alternative schemes of Columbia River development made by engineering consultants. You express confidence that had such a study been

made it would have supported the Sequence IXA plan of the International Columbia River Engineering Board. The Government of British Columbia of course participated in the work of the I.C.R.E.B. and were aware that the 1959 report by this Board did not specifically prefer the Sequence IXA plan but rather indicated that, from a purely national viewpoint, the extra energy produced by the plan over alternatives involving lesser amounts of Kootenay River diversion, did not appear attractive.

The British Columbia Government, however, did undertake and complete an engineering study of its own prior to making its decision on the flooding of the East Kootenay Valley. In July of 1956 the engineering firm of Crippen Wright Engineering Limited was given very broad terms of reference covering not only a thorough study of all possibilities of Columbia River development, but also the effects of integrated operation with the Clearwater system. The resulting engineering report dated January 1959 encompasses nine substantial volumes and does not recommend Sequence IXA plan but rather finds it uneconomic in comparison with plans involving lesser diversions. In addition to the findings of that engineering firm the Province no doubt had access to the 1957 report to the Federal Government in which the Montreal Engineering Company recommended a diversion by a low structure at Canel Flats plus the High Arrow project in any cooperative plan of development of the Columbia River.

It would therefore appear that studies by engineering firms as well as by Federal Government engineers do not support the Sequence IXA plan, but rather favour a limited diversion involving less expense and flooding in Canada. Barring a complete lack of faith in these conclusions, as well as in the conclusions reached by federal government engineers who have produced their own studies and assisted the I.C.R.E.B., I really can see little advantage in calling for further studies on a matter which has been decided by the responsible Government. Unless it were clear beyond reasonable doubt that a plan of development favoured by the owner of the resource, the provincial government, was positively prejudicial to the national interest, I do not see how the federal government could properly oppose or prevent it. As I mentioned in my letter, I think this view is in line with the opinions you yourself expressed at one stage before a House of Commons committee.

Perhaps our comments on this first point lead us automatically into the second; that of Canada's ability to control the operation of the Treaty storage in a way which will safeguard power generation within Canada. Your article in the 1963 Spring Issue of the International Journal, to which your letter refers, dismisses the control we have maintained, and questions Canada's ability to proceed with the full development of sites such as Mica, Downie Creek and Revelstoke Canyon. Once again I must refer to the conclusions reached by engineers and engineering firms who have studied this aspect of the Treaty. Three engineering firms, Montreal Engineering, Casco Consultants Limited (H. G. Acres, Shawinigan Engineering and Crippen Wright Engineering) and the combined firms of Sir Alexander Gibb and Herz and McLellan also support the Treaty in this respect.

I note that your article in the International Journal refers to a sentence in the Gibb-Herz McLellan report which states that releases from Canadian storage under the Treaty terms will be out of phase with Canada's own needs, and we will therefore be subjected to penalty payments. The next sentence of the Gibb report, however, goes on to say:

Fortunately . . . Arrow Lakes can largely absorb the difference in outflow so that, except in three months, the flow to the U.S.A. remains the same as that required for optimum downstream benefits.

The Companies reported to the B.C. Energy Board as follows:

The flexibility allowed under the Treaty for the operation of these storage reservoirs will enable the Canadian power plants on the main stem to be operated in the interests of the British Columbia load and without serious reduction in the amount of the downstream benefits.

I am not all clear whether you disagree with these conclusions. If you do, the reasons behind your objections are not set out in detail in the International Journal article and it would be helpful to me if you could advise me of them.

The third point covered by my letter of the 6th of August was not mentioned in your reply so perhaps that point can be left at this time.

I am sure that you realize the position that I am in. My decisions on this matter should be based on all the evidence available to me. To date you appear to be the only engineer with an intimate knowledge of this subject who seriously questions the conclusions reached by other engineers and engineering firms. I am making every effort in the present negotiations on the Protocol to plug loopholes in the present Treaty. Having great respect for your insight in such matters, I would find it very helpful if you could advise me in detail on some of the specific points I have referred to. I hope that we will be successful in obtaining a Protocol which will meet your concern on a great many points.

General A. G. L. McNaughton
393 Fernbank Road
Rockcliffe Park
Ottawa, Ontario

Yours sincerely,

Paul Martin

SEPTEMBER 23, 1963

The Hon. Paul Martin, P. C.
Secretary of State for External Affairs, Canada,
House of Commons,
Ottawa.

Dear Mr. Martin:

Thank you for your letter of 10 Sept. 1963 in reply to mine of 22 August 63. I will endeavour to answer the points you raise paragraph by paragraph in sequence.

Re your Para 2. I note your reference to the three particular objections to the Treaty of 17 Jan 1961, which I had mentioned in the Brief I presented to you on 18 July 63.

I am glad you agree I have answered your queries on the first, namely the proper selection of the treaty projects. Also, I hope you agree with the considerations I have advanced in regard to the second point relating to the control of the Canadian storages. I note you say I have indirectly replied, by which I understand you refer to my article in the Canadian Institute of International Affairs Journal, Spring 1963 issue, of which I sent you a copy some weeks ago.

In this I think I have given an exposition of the *defects* in the current draft treaty, which in my view, it is imperative should be corrected. I conclude from the last paragraph of your letter that some at least of these points have met with your acceptance, but as I think you know, I do not think a protocol can correct the basic faults.

In regard to the third point, which is my comparison of the costs and benefits of the Canadian storage to the United States for flood control, you have stated that I have omitted to reply. I will therefore do so now. The statement in my Brief of 18 July 63 reads, "for flood control, \$64 million is the payment for a service which would cost the U.S. \$700 million".

The figure given by the U.S. Secretary of the Interior to the U.S. Senate Committee (8 March 61) (Page 26) is \$710 million. While this figure does include the cost of some additional services in the U.S., the simple fact is that the U.S. must make the whole of this investment before the flood control protection can become available. Moreover, the Canadian storages are unique in that they are the only available sites in the basin which lie across the line of flow of floods originating upstream on the Columbia and therefore provide a service which can never be fully duplicated in the U.S.

Your suggestion that in an assessment of relative advantages received, the \$64 million payment to Canada should be increased by a share of our power benefits, in my view relates to another transaction and is not relevant to the flood control comparison I have made, which, as stated represents a very modest expression of the immense benefits which the U.S. receives and which are drastically undervalued in the \$64 million arrangement proposed.

I hope the treaty will be revised to include a payment for "primary" flood control *only* which will represent, in fact, half the actual damages prevented by the Canadian storages as measured in the condition of actual development in the areas at risk from time to time. I hope also IJC Flood Control Principle No. 6, to give added protection in the U.S. in the case of floods of exceptional great magnitude, will be re-instated, this to be made on call, subject to a provision to prevent abuse and damage to Canadian interests. I have dealt with the various aspects of flood control in detail in my CI of IA article.

Re your Para 3. I do not agree that the government of B.C. is the government responsible for final selection, by which I understand you mean the ultimate decision. The Columbia and the Kootenay are rivers which flow out of Canada, and, under the BNA Act, Canada, by the International River Improvement Act, has asserted jurisdiction.

The Government of Canada is therefore *the final authority* and is responsible, at the least, that harm is not done to Canada. These are the words I have heard used by competent legal authority and with which I find myself in complete agreement.

In this connection, you may wish to have looked up for you the statement made by the Hon. Jean Lesage in July, 1955, when he held the office of Minister of Northern Affairs and National Resources in the St. Laurent administration (see Electrical Digest, July, 1955) and was responsible for the presentation of the International Rivers Bill to Parliament.

As regards your comments on the ICREB Report of March, 1959, this report did not recommend any particular plan of development but merely supplied data on which the various plans studied physically could be compared economically. The following are the ICREB figures for the Canadian projects in the Copper Creek (Seq Viii) and Dorr (Seq IXa) plans respectively:

| | Investment Cost (\$ million) | Output (MW) |
|---------------------|---------------------------------|----------------|
| Copper Creek | 884.9 | 2523 |
| Dorr | 911.8 | 2691 |
| Dorr increase | 26.9 | 168 |

These figures evidence a substantial increase in output for Dorr for Canada for a small additional cost. However other factors, which have deep significance

in the protection of national interests, also must be considered in an overall comparison. In this connection, I would like to say that under Article IV of the Treaty of 1909, the U.S. cannot develop Libby economically without permission to flood 150" deep at the boundary, extending upstream into Canada some 42 miles. Moreover, under Article II, Canada has jurisdiction to divert flows originating in Canada and to store and regulate these flows as may be advantageous. Under this authority, 5.8 million acre feet of average annual flow could be diverted from the Kootenay and used down the Columbia through an additional head in Canada of up to 688 ft after allowing for pumping the flows originating in Canada and to store and regulate these flows as may be energy. This regulated flow will contribute materially to the maintenance of heads at the Canadian plants, to the flexibility of regulation, and to an increase in the peaking capability at the Canadian plants of the Columbia alone of about half a million KW.

Moreover, the water stored in Dorr-Bull River-Luxor, as well as in Mica, all of which is of Canadian origin, will be physically as well as jurisdictionally under the sovereign control of Canada, to regulate and to divert as Canada's interests and those of her provinces determine. I remark that in the case of the Pend d'Oreille, similar rights were claimed by the U.S. and recognized by the IJC in the Waneta Order, so that in this diversion of the Kootenay to the Columbia, we have adequate precedent established by our neighbour.

For Canada, it is vital and imperative that this jurisdiction should be maintained. From this "Canadian best use value" within the Columbia River System as prescribed in the instructions to the IJC of 28 and 29 Jan 1959, there is a wide and ample opportunity to provide additional benefits in power and flood control which may be shared equitably with the U.S.

In connection with the Dorr Plan, I would mention further that the Department of Agriculture has reported that the development of the East Kootenay storages will have a beneficial effect on agriculture. This advice was given in a letter signed by S. C. Barry, Department of Agriculture, addressed to the Secretary, Canadian Section, IJC, dated 14 June 1960, and I mention it in case this communication has not been brought to your attention.

In your Para 4, you make reference to the Crippen Wright report dated 9 July 1959 and comprising, you mention, "nine substantial volumes". I received this report direct from the government of BC the day before I left for Washington to commence the negotiations of the IJC Principles. The general part of the report proved useful to me in making my presentation to my U.S. colleagues and later I was able to peruse the whole report which provided a mass of information relative to a multiplicity of possible sites and alternatives for power dams and storages, including tentative schedules of construction, installed capacities and the like. This was useful in checking the physical proposals made by the ICREB, and I think served to confirm the selections which had been made of the individual projects. However I do not recall that any of the volumes I have seen contained any comprehensive summary or comparison of the relative merits of these projects when combined in the several IJC sequences.

If there is such a report as you mention, I would be grateful for a specific reference, or a copy, when I will at once discuss it with Mr. Crippen, with whom I have the pleasure of being acquainted.

In your Para 4, you make reference also to the report made to the Federal Government by Montreal Engineering in 1957. I recall that a number of the sites proposed for development by this report became eliminated in the course of the ICREB and IJC discussions. Certainly I do not recall that it contains any proof that we should depart from the Dorr Plan with its manifest advantages to Canada in cost-saving, power production, flexibility of regulation for Mica

and the other great Canadian plants, and in what, it now turns out as a result of experience, is the paramount necessity of maintaining Canadian jurisdiction and control over waters of Canadian origin.

I notice that nowhere have you mentioned the 1961 Report of the same company. I raise this matter to say that I have re-read this report recently. I find it was commissioned by letter from the Deputy Minister NA and NR, under date of 15 April 1961, and that it was presented on 15 May 1961, that is, one month and two days later! The letter of transmittal evidences close participation by an officer of NA and NR. The report is confined to the Treaty projects and there is *no* mention whatever of Dorr-Bull River-Luxor.

So this report also provides no basis whatever for comparison of the Copper Creek and Dorr plans. It is however of particular interest because it makes three important specific criticisms of the Treaty of 17 Jan 1961, namely:

1. In regard to Article X of the Treaty, on Page 15 the following appears:

"...under the design assumptions...the downstream benefits...could be transmitted on a firm basis to the load centres over the 345,000 volt system *without necessity of the standby transmission in the United States* specified in Article X of the Treaty. Hence payment by Canada for standby transmission would *not be necessary* if an inter-connection agreement could be negotiated with the United States".

I made some reference to Article X in my CI of IA article and elsewhere I have described it as a device to impose on Canada the cost of transmission of Canada's half (?) share of the downstream benefits from the point of generation in the U.S. to the boundary near Oliver, B.C. In this connection you will find Mr. Udall's remarks (U.S. Senate Committee, 8 March 1961, PP 25 and 26) of interest. Article X also means that until Canada enters an inter-connection agreement, whatever its terms, Canada will have to continue to pay some \$1.8 million a year or more, for an idle privilege or the occasional use of a U.S. transmission line. It seems we can only eliminate these payments if the U.S. consents and you may expect the cost of this consent to be heavy.

The phraseology of Article X is exceedingly adroit. "Downstream benefits to which Canada is entitled" would seem to mean the amount before the surplus Canadian share of capacity is exchanged for energy, and this would add materially to the cost of the standby service to Canada.

I think probably the more important objective sought by the U.S. in this Article is as a deterrent to any Canadian claim being put forward for a share of increased downstream benefit capacity when the U.S. requirement for regulation of flow changes from firm power to peaking or the equivalent. In the light of this consideration, I expect that Article X, if it remains in the Treaty, will make it very difficult to obtain, subsequently, an inter-connection agreement which will be free of serious adverse effect on Canadian interests.

Therefore, I think it important that the anxieties expressed by Montreal Engineering as well as by myself should result in a prompt rejection of Article X.

2. In a footnote on Page 24 and re-emphasized on Page 25, Montreal Engineering asserts that the criteria of operation of the Canadian storage prescribed in Annex A Para (7) will result in Canadian output less than might otherwise be obtained and point out that *no study has yet been made* to determine the net result. Here is a report commissioned by the Government of Canada and you have been warned that no study has yet been made to determine the net result of the operation of Mica for system benefits when this plant is machined. I pose this question! How do you justify the repeated assurances that have been made that Canada's interests will be adequately protected by this Treaty?

I have pointed out repeatedly the very serious danger to Canada in this situation and in this connection I would refer you particularly to my address to the Engineering Institute of Canada in Montreal on 15 June 1962. I will refer to this further in my comment on your Para 8.

3. On Pages 2, 19, and 25, Montreal Engineering refers to the declining downstream benefits to firm power (note that the arrangement does not provide the half share of the gain in the United States which was specified in the IJC Principles). I recall also that the Treaty gives no specific assurance as to the amount or the continuance of these benefits.

I have already expressed both directly and indirectly my own criticism on the afore-mentioned three points and I refer you to my CI of IA article and to my statement to the EIC on 13 June 1963 and published by the Institute in Criticism of the paper by Mr. McMordie, General Manager of the B.C. Power Commission.

In regard to your Para 5, may I recall again that not even one of the reports mentioned in your earlier paragraphs which I have seen, contains any comparison between the Treaty projects and the Dorr Plan (Seq IXa), and the same is true for the Montreal Engineering Report of May 1961, which you do *Not* mention. As to the Gibb and Merz and McLellan Report, to which you refer later, this report is specifically confined to the Treaty projects by the terms of reference. These projects are as developed in the Copper Creek plan in the ICREB Report.

I am aware also that engineers in the Department of NA and NR have opposed the Dorr plan and that they have resisted warnings given by Montreal Engineering. They have even complained to Montreal Engineering "that the views of technical advisers during the negotiations are not supported in your report".

As regards the last sentence of your Para 5, may I say I *do* recall the opinion you attribute to me as having been expressed to the External Affairs Committee in respect to the rejection of Libby. The government to which I referred as *responsible* was the Government of Canada.

In your Para 6, you refer to the question of "Canada's ability to control the operation of the Treaty storages in a way which will safeguard generation in Canada"; also to Montreal Engineering, Casco Consultants, and Gibb and Merz and McLellan, as supporting the Treaty in this respect.

The actual wording of the Montreal Engineering report in this connection is, "The estimated annual generation *has been assumed* to be *fully usable* to meet power requirements in B.C. *It is thought* that the provisions contained in the Treaty for changing the operation of the Mica Creek storage after the installation of at-site generating facilities, and the availability of the Arrow Lakes reservoir for release ahead of Mica, warrant this assumption. *Studies should be made to confirm this assumption at the first opportunity.*" This report clearly expresses anxiety on the matter.

I have never seen the Casco Report but I have understood that it too had been directed by order of the B.C. Government to the Treaty projects. I will comment on the opinion expressed in the Gibb Report in my reply to your Para 8.

In regard to your Para 8, in the quotation please note the words "except for three months". As was pointed out in the IJC Principles report, in Canada we will be concerned for a very long time into the future to use our own hydro-electric resources to supply *firm power* to our loads.

Firm power is power which is completely *assured* and the amount which can be contracted to be sold is fixed by the minimum dependable generation in a representative critical period of low flows. Please see the definition of prime power in Appendix 4 of the Gibb Report which is a fair statement.

The dire effect of the Treaty is increased by the exception which Gibb has stated will apply during three months.

Under Annex A, Para (7), Regulation for optimum system benefits, this effect has been stated by the Chairman, B.C. Power Commission (Keenleyside) to result in a decrease in average annual production suitable for the Canadian load from Mica (including I think Downey and Revelstoke Canyon) from "1,000 MW to 100 or 200 MW".

This information was given under oath but it may seem extravagant. However for comparison I would mention that the effect produced at Waneta by U.S. control of the storage upstream on the Pend d'Oreille for refill of Hungry Horse is a reduction in capacity during the late summer from 4 units to 1 unit, that is, a reduction by 75% in the amount of firm power deliverable to the Canadian load.

In regard to your Para 9, I note the extract from Page 4, Para 3 of the Gibb Company's letter of transmittal.

By Annex A, Para (7) of the Treaty, the Canadian storages are to be operated "to achieve optimum power generation at site in Canada and downstream in Canada and the United States". This applies to all the Canadian storages provided in the Treaty and there is no exception to permit Mica to be operated one way for Canadian benefits and High Arrow in another for U.S. benefits, unless, under Para (8), Canada makes up the total deficiency to the United States. This may be large because of the fundamental difference in national purpose when thermal comes to predominate in the U.S. system.

I am surprised that the Gibb Company in their covering letter have not mentioned this defect in the Treaty, but I observe, in re-reading their report, that many unresolved doubts have been expressed and more particularly that they have not insisted that detailed studies on regulation be carried out. This means that the great benefits attributable to Seq IXa have *not*, it appears, come within their opportunity for consideration.

Re your Para 10. Please let me assure you that I *do* differ from your interpretation of these reports on the points I have noted. I think the foregoing explanations of the meaning of Annex A Para (7) and (8), and the statements of Keenleyside and Montreal Engineering, and the doubts expressed in the Gibb Report itself, should carry conviction that what I have stated is in fact correct.

Re your Para 12. Please let me assure you also that I do not stand alone in the views I have expressed. These have been checked in studies over many months with Canadian engineers and others who are highly qualified in hydro-electric thermal system operation and include on the basic points important experts in this field in the United States. I am prepared to support the views I have expressed in any competent forum and I am confident I will have wide support.

In any event, from reading your letter, it seems that I have aroused *your* doubts about the Treaty and this is heartening because these matters are so supremely important to Canada that I do think the responsible government—namely the Government of Canada—should not rest until the technical aspects, legal and engineering, have been inquired into and reported upon by independent, fully qualified and responsible expert consultants in these respective fields and all doubt removed.

Accordingly I repeat the recommendation given to you in my letter of 22 August 1963.

Meanwhile, I do hope I have given you sufficient information for your expressed purpose to *plug loop-holes* in the present Treaty. May I say this line of thought on your part brings me a measure of encouragement, but I must add

that merely plugging loop-holes is far short of the basic corrections to the Treaty which I regard as requisite.

Please be assured I will indeed be pleased to go into any other points you may have occasion to mention.

Yours very sincerely,

A. G. L. McNaughton.

OTTAWA, October 8, 1963.

General A. G. L. McNaughton,
393 Fernbank Road,
Rockcliffe Park, Ottawa, Ontario.

Dear General McNaughton,

Once again I am indebted to you for the time and effort you have given in providing me with your views on the Columbia River Treaty. Your letter of the 23rd of September commenting in detail on points I had previously raised concerning the Treaty is much appreciated. While I shall not attempt to reply in detail to your letter, you may be interested in some very general observations on the initial three points which were under consideration.

Your reference to a necessary expenditure of \$710 million by the United States to provide flood control protection equivalent to that provided by the Treaty perhaps requires further investigation. My understanding was that this investment would provide not only equivalent flood control protection, but also equivalent power benefits. Furthermore, these domestic projects would provide a power benefit of continuing rather than diminishing value. The allocation of the \$710 million was given as \$140 million for flood control, \$70 million for transmission and \$500 million for power generation. If the whole cost of \$710 million is assessed against flood control, then surely we would have to say that the United States alternative plan would provide power benefits equivalent to those of the Treaty and at no cost. What complicates the picture further is that one of the projects making up the \$710 million investment is under construction already and a further one is under study by Congress. The incremental cost to the United States of pursuing a unilateral plan would therefore appear to be rapidly diminishing.

As to approval of the Treaty projects, it is true that this government has the final say, in a negative sense, through the application of the International River Improvement Act. However, the action of refusing to approve a development proposed by a Province in relation to resources of which it is the constitutional owner is one that cannot be taken without good and adequate cause. As I pointed out in my last letter, there seems ample engineering evidence to support the selection of the present Treaty projects. The table on page 102 of the I.C.R.E.B. report indicates that the cost of the increment of energy gained by selecting a maximum diversion plan as opposed to a partial diversion exceeds in all cases the average system cost of energy. My reference to the report of Crippen Wright Engineering Ltd. also supports this conclusion. The "Summary of Findings" of their Interim Report No. 2, "Diversion of Kootenay River into Columbia River", contained the following statements:

4. The dam for diverting the Kootenay should be located at either Canal Flats or Copper Creek.
5. Two other possible sites for a diversion dam on the Kootenay River are situated near the confluence with the Bull River, one just above the confluence, the other just below. Schemes incorporating diversion dams at these alternative sites are found to be uneconomic in comparison with schemes dependent on a diversion dam at Canal Flats or Copper Creek, and they are not recommended.

While it is true that the Crippen Wright report did not study plans of development identical with those investigated by the I.C.R.E.B. report, the developed head on the Columbia River in most cases exceeded that considered in the I.C.R.E.B. studies and therefore would give an added incentive for the larger diversion. In spite of this fact the report favoured the more limited diversions.

I note that your letter refers to a Department of Agriculture report which you feel indicates that the maximum diversion plan would have a "beneficial effect" on agriculture in the East Kootenays. This one-page report is one of many papers that have been included in briefing documents prepared on the Treaty proposal. The report notes that among the 91,000 acres of land which would be flooded by the maximum diversion dam there are 24,000 acres which, if reclaimed, would be arable without irrigation, and 26,000 acres which have "some agricultural potential" and could support "low priced crops" if irrigation could be provided. The value of the crops obtainable would be so low that apparently irrigation would be impractical. The report then notes that there are 300,000 acres of land above the proposed reservoir level which, if irrigation could be provided, would be as potentially arable as the previously mentioned 26,000 acres. While it concludes that the agricultural potential of the area could be increased if irrigation water could be provided from the diversion reservoirs (just as it could if irrigation could be provided without the dams), the report makes no suggestion that irrigation water could in fact be economically provided to the high land after the construction of the dams. Whether or not the diversion dams would have a beneficial effect would seemingly depend upon the practicability of irrigating the increased potential acreage.

Finally, dealing with the third point under consideration, that of Canadian control over the Treaty projects, my letter of the 10th of September did not refer to the 1961 Report of the Montreal Engineering Company because that report did not involve a study of possible conflicts in operation under the Treaty but was requested solely as a means of double checking on the accuracy of the many calculations carried out during the negotiation of the Treaty. The report involved slightly more than two months of concentrated effort on the part of the Company.

In answer to your question as to how I can justify the repeated assurances of adequate protection for Canada, my reply is that further studies were carried out by the Montreal Engineering Company during the fall and winter of 1961 and these studies provided very strong support for not only the Treaty provisions for Canadian operation, but also for the High Arrow dam.

I am sure that your views on the Treaty plan are based upon a sincere conviction that the plan is contrary to the best interests of Canada. I am equally sure that the opinions which have been expressed by officials of the Department of Northern Affairs and National Resources have been motivated by sincere doubts as to the economic feasibility of your maximum diversion plan. These engineering officials did not "resist" warnings of the Montreal Engineering Company, but I understand that, on the contrary, they were instrumental in having that Company requested to investigate the problems of operation under the Treaty. I am certain that the further request to that Company for an explanation of one portion of their 1961 report was not a "complaint", but rather was an attempt by the officials to fully investigate what might have been a serious but perhaps unavoidable fault in the Treaty. I am firmly convinced that the actions of the Government's engineers have had the best interests of Canada in mind.

I realize that this has been a very brief discussion of your three major points of criticism. I assure you, however, that your detailed comments will be given the fullest study and wherever weaknesses appear in the present Treaty every effort will be made to correct them.

I am attaching for your information a recent comparison of benefit-cost ratios for High Arrow and Mica storages as well as a Water Resources Branch paper on diversions of water for consumptive use. You will remember that these two items were requested during our meetings this past summer. I am sure you will find them of interest.

Thank you again for your letter.

Yours sincerely,

Paul Martin.

BENEFIT-COST STUDIES

Assumptions

September 1963

(1) In studies excluding the High Arrow project, the conflict *which would exist* in operating Mica for at-site power and downstream benefits has been ignored.

(2) It has been assumed that all the project positions studied would be acceptable to the three governments concerned.

(3) West Kootenay benefits are not considered.

(4) Downstream benefits are sold within the United States at 2.5 mills per kwh and \$8.00 per kw (Canadian funds).

(5) Mica at-site generation is transmitted to Vancouver for sale.

(6) Value of power at Vancouver at 345 kv terminals is 3.0 mills per kwh and \$8.20 per kw (4.6 mills per kwh at 60% load factor).

(7) No reduction in benefits due to time lost in possible renegotiation.

(8) Mica storage commitment to Treaty operation is limited to 7.0 million c-ft. (Consistent with average at-site use).

(9) Most recent project cost estimates were adopted.

| Study No. | Projects | Credit Position | Benefit-Cost Ratio |
|-----------|-------------------|--|--------------------|
| (a) | High Arrow | 1st ADDED To U.S. Base System | 1.8 |
| (b) | High Arrow | 2nd ADDED To Duncan Lake | 1.6 |
| (a) | Mica Storage Only | 1st ADDED To U.S. Base System | 1.1 |
| (b) | Mica Storage Only | 2nd ADDED After Duncan | 1.0 |
| (c) | Mica Storage Only | 2nd ADDED After Duncan & Bruces Eddy | 0.9 |
| (d) | Mica Storage Only | 2nd ADDED After Duncan, Bruces Eddy and High Mountain Sheep | 0.8 |
| (e) | Mica Storage Only | 2nd ADDED After Duncan, Bruces Eddy, High Mtn. Sheep & Knowles | 0.6 |

| | | | |
|-------|------------------------------|--|-----|
| 3 (a) | Mica Storage + Generation | 1st ADDED To U.S. Base System | 1.2 |
| (b) | Mica Storage + Generation | 2nd ADDED After Duncan | 1.1 |
| (c) | Mica Storage + Generation | 2nd ADDED After Duncan & Bruces Eddy | 1.1 |
| (d) | Mica Storage + Generation | 2nd ADDED After Duncan, Bruces Eddy & High Mountain Sheep | 1.0 |
| (e) | Mica Storage + Generation | 2nd ADDED After Duncan, Bruces Eddy High Mtn. Sheep & Knowles | 0.9 |

DIVERSIONS OF WATER FOR IRRIGATION AND
OTHER CONSUMPTIVE USES
COLUMBIA RIVER BASIN

Water Resources Branch

August 1963

DIVERSIONS OF WATER FOR IRRIGATION AND OTHER CONSUMPTIVE
USES—COLUMBIA RIVER BASIN

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DIVERSIONS OF WATER FOR IRRIGATION AND OTHER CONSUMPTIVE
USES

COLUMBIA RIVER BASIN

I. Schemes for Diversion of Water Out of the Columbia River Basin

Article XIII(1) of the proposed Columbia River Treaty does not prevent diversions out of the Columbia River Basin for consumptive purposes. Such diversions for irrigation purposes have been a subject of several preliminary studies. Diversions from the Columbia or Kootenay Rivers would affect existing and potential water-use developments in the Columbia River Basin.

The purpose of this paper is to provide a brief outline of the major diversion possibilities that have been studied. It should be noted at the outset, that few of the diversion schemes have been studied in depth, and much additional examination would be required before feasibility of the schemes could be established. The studies, however, have indicated that diversions from the Basin could be accomplished only through the construction of complex and costly storage and conveyance facilities. On the basis of the preliminary studies, the major diversion possibilities from the Columbia River Basin for consumptive purposes outside of the Basin have been found to be relatively unattractive under present-day conditions. The usefulness of these diversion possibilities as elements of long-range water-use planning, however, cannot be discounted entirely because economic conditions are ever changing.

1. Diversions from the Columbia and Kootenay Rivers in Canada to the Saskatchewan River Basin in the Prairie Provinces

A reconnaissance study was carried out for the Saskatchewan Power Corporation by Crippen Wright Engineering Ltd. to assess the possibilities of augmenting the water supply of the Saskatchewan River system by diversions from outside the basin. The study was initiated on the premise that present river flows will be considerably depleted in the future by irrigation, municipal, and industrial requirements.

Although no long-range forecasts of consumptive uses in the Prairie Provinces are available, it has been suggested that the population of the three Prairie Provinces will eventually reach 100 million people; requiring 50,000 cfs of water for consumptive purposes. It is interesting to note that on the basis of population growth of 2.2% per annum experienced during the past 10 years in the Prairie Provinces, it would require a further period of 158 years for the three Prairie Provinces to reach a total population of 100 million people.

The Crippen Wright report of March 1962 suggested a programme that might start with the diversion of the upper North Saskatchewan River into the South Saskatchewan River. This would be followed by diversion from the Athabaska River into the North Saskatchewan River where the water could be utilized along the North Saskatchewan itself, or could be diverted, in turn, for use in the South Saskatchewan system. The next stage of the programme envisaged diversion from the Peace River into the Athabaska River for further diversions to the South Saskatchewan River system. In the late stages of the programme, small diversions could be made from the Fraser River system. At an ultimate stage of the diversion programme, the more expensive diversion possibilities from the Columbia River Basin might be developed.

Seven possible routes for diversion from the Columbia River Basin to the Prairies were outline in the Crippen Wright report. These possibilities are described briefly below. The diversion schemes and their associated costs were based only on paper location with very little first hand knowledge of terrain or soil conditions.

Two basic assumptions were made in deriving cost estimates:

(i) the destination of the diverted water was considered to be the South Saskatchewan River system where water could be released to large tracts of irrigable land.

(ii) diversion projects of the magnitude suggested in the report would not be considered in a period of high interest rate or without special financing arrangements; consequently, annual costs for the studies were computed on the basis of $3\frac{1}{2}\%$ interest rate with a 60-year amortization period.

(a) Diversions from Mica Reservoir into the Athabaska River

Three alternative schemes were studied for diversion from the proposed Mica reservoir on the Columbia River into the Athabaska River. Estimates of costs were made for a diversion of 4,350,000 acre-feet of water annually. The estimates included the cost of pumping and diversion works through the Rocky Mountains to the Athabaska system. They also included the increment of cost required to transfer this additional water from the Athabaska system to the South Saskatchewan River. *The cost estimates, however, did not include any portion of the cost of Mica dam and reservoir, nor did it provide any compensation for losses that would be incurred in the Columbia River Basin as a result of such diversion.*⁽¹⁾

Of the three alternative schemes, the annual unit-cost of the lowest cost scheme was estimated to be in the order of \$7.50 per acre-foot of diverted water delivered to the South Saskatchewan system.

(b) Diversions from Surprise Rapids Reservoir to North Saskatchewan River

Consideration was given to a scheme for diversion from a reservoir on the Columbia River above Surprise Rapids into the North Saskatchewan River system. Estimates of costs were made for a diversion of 4,350,000 acre-feet of water annually; and included the costs of Surprise Rapids Reservoir, pumping and associated diversion works through the Rocky Mountains, and transferring of water from the North Saskatchewan River system to the South Saskatchewan River system.

The annual unit cost was estimated to be \$10.50 per acre-foot of diverted water delivered to the South Saskatchewan system. The cost estimates did not provide any compensation for adverse effects on Columbia River Basin developments. (See footnote at bottom of page.)

(c) Diversions from the Upper Columbia-Kootenay Reaches into the South Saskatchewan River

Three alternative schemes were studied for the diversion of water from the Columbia River basin directly into the South Saskatchewan system. Two of these schemes would involve diversions from reservoirs on the upper reach of the Columbia River with water supplemented by diversion from the Kootenay River. In both schemes, the water would be delivered into Bow River, a tributary of the South Saskatchewan River. The third scheme would involve diversion from the Kootenay and Elk Rivers through the Rocky Mountains into Oldman River, a tributary of the South Saskatchewan River.

Diversions under these three schemes have the advantage of directly reaching the South Saskatchewan system without the need of subsequent re-routing of flows from either or both the Athabaska and North Saskatchewan Rivers.

⁽¹⁾ At 3 mills/kwh, the loss in energy generation alone at existing and potential main stern plants on the Columbia River in Canada and the United States would amount to about \$5.50 per year for every acre-foot of water diverted. Of the \$5.50, \$2.40 would be lost in Canada and \$3.10 in the U.S.

Of the three alternative schemes, diversions from the Kootenay and Elk Rivers were found to yield the lowest annual unit cost. For a diversion of 5,000,000 acre-feet of water annually, the annual unit cost was estimated to be \$7.60 per acre-foot. The cost estimates did not provide any compensation for adverse effects on Columbia River Basin developments.⁽¹⁾

(d) Diversions of Minor Tributaries

The studies for the Saskatchewan Power Corporation did not reveal any possibilities for economic gravity diversion of small tributary streams at high altitudes in the Columbia River Basin. A study by the Water Resources Branch indicated a possibility of diverting about 150,000 acre-feet annually from the Flathead River in B.C. to the Oldman River system in Alberta. On the basis of 3½% interest rate and 60-year amortization period, the annual unit cost of the Flathead diversion would be in the order of \$4 to \$5 per acre-foot of diverted water.

A comparison of the costs of the various schemes as presented in the Crippen Wright report is tabulated below.

Annual Cost/Acre-Foot of Water Delivered
To South Saskatchewan System
(At 3½% Interest)

| Diversion Scheme | Total Diversion (Ac-Ft) | Annual Cost \$/Ac-Ft |
|------------------------------|----------------------------|-------------------------|
| North Saskatchewan | 1,900,000 | \$ 0.40 |
| Athabaska | 4,500,000 | 3.50 |
| Peace River | 14,500,000 | 4.60 |
| Upper Fraser (Alt. No. 1) .. | 1,087,000 | 6.00 |
| Upper Fraser (Alt. No. 2) .. | 4,350,000 | 8.30 |
| Columbia River (Alt. No. 1) | | |
| Mica Diversion | 4,350,000 | 7.50 ⁽²⁾ |
| Columbia River (Alt. No. 2) | | |
| Surprise Diversion | 4,350,000 | 10.50 |
| Kootenay River | 5,000,000 | 7.60 |

From the foregoing brief descriptions, it can be seen that the costs of diversions from the Columbia River Basin to the Prairies would be among the highest of the various alternatives. It would be of interest to note that some of the irrigation projects in Alberta have been developed in recent years at a capital cost of about \$25 per acre-foot of storage including dam and main canal works. At 3½% interest rate and 60-year amortization period, the annual cost would work out to substantially less than \$2 per acre-foot. It is evident that diversions from the Columbia to the Prairies lie in the realm of economic possibility well in the future when all the available lower cost schemes have been developed.

2. Diversions from the Pend Oreille and Kootenai Rivers in the United States

(a) Pend Oreille Diversion to the Columbia Basin Irrigation Project

Several investigations dating back to 1903 have been carried out to study the possibilities of a gravity diversion from the Pend Oreille River for irrigation of over 1.5 million acres of arable land east of the Columbia River, in South Central Washington. The scheme consisted essentially of a diversion

⁽¹⁾ At 3 mills/kwh, the loss in energy generation alone at existing and potential plants on the Kootenay and Columbia Rivers in Canada and the United States would amount to over \$5.00 per year for every acre-foot of water diverted.

⁽²⁾ Mica Reservoir costs not included.

dam on the Pend Oreille River at Albeni Falls, together with a system of canals, tunnels, reservoirs, inverted siphons and a viaduct crossing Spokane River, to carry the water 130 miles from Albeni Falls to the bifurcation works at the head of the irrigable tract.

The gravity diversion scheme from the Pend Oreille River was abandoned in 1932 on recommendation of the Corps of Engineers in favour of a pumping scheme from the Grand Coulee reservoir to supply the necessary irrigation water.

(b) Pend Oreille Diversion to California

In a 1951 reconnaissance report of the Bureau of Reclamation, a scheme was outlined for a possible diversion of surplus water from the Pend Oreille to supply the needs of Northern California. Diversions from the Albeni Falls Reservoir on the Pend Oreille River "... could be carried by gravity flow to the Klamath River above the Ah Pah Reservoir. The total length of the aqueduct to the Klamath River* would be about 1,020 miles, of which about 290 miles would be tunnel and 40 miles in siphon. No estimates of cost were made for this plan because the necessary length of aqueduct causes it to appear unattractive, and also because tentative analysis of ultimate local water requirements indicate a lack of any substantial exportable surplus."

It might be well to point out that the Pend Oreille River downstream from Albeni Falls is now almost totally developed for hydro-electric power generation. A high degree of river regulation is also available from upstream storage; therefore, any diversions from the Pend Oreille would represent a material loss of power at downstream plants on both the Pend Oreille River and the main stem of the Columbia River. For energy alone at 3 miles per kwh, this loss would amount to \$4 per year for every acre-foot of water diverted.

(c) Kootenay River Diversion to the State of Washington, Oregon and California

It would be in the realm of physical possibility to divert flow from the Kootenay River into the Albeni Falls reservoir on the Pend Oreille for further diversions to the States of Washington, Oregon and California. The diversion could be accomplished by a high dam at a site on the Kootenay River below Troy, Montana, or by a gravity system of canals and tunnels from the proposed Libby reservoir. The water would be diverted over the Bull River-Lake Creek saddle.

No detailed studies or cost estimates have been made for such a plan. The economics of such a diversion would be highly questionable because of the expensive and long conveyance works associated with the scheme and similar power losses as those referred to under the Pend Oreille diversion plan.

Water from the Columbia River Basin cannot be transported in small quantities economically over a long distance. Any large scale diversion, however, would affect the power outputs at all existing and potential power developments downstream in Canada as well as the United States. In addition, with the high degree of regulation that would be available at the proposed Libby reservoir, and the possibility of Canadian diversions of the Kootenay River possible under the terms of the proposed Columbia River Treaty, it is doubtful that any large supply of surplus water would be available for export from the Kootenay River to other river basins in the United States.

* The Klamath River rises on the Oregon-California border. Diverted water would have to be transported a further 300 miles to the San Francisco area and 600 miles to the Los Angeles area. The total length from Albeni Falls to Los Angeles would be approximately 1,600 miles.

II. Schemes for Diversion of Water Into The Columbia River Basin

1. Shuswap River diversion to Okanagan Lake

It has been estimated that eventually there would be a deficiency of over 350,000 acre-feet of water to meet irrigation requirements in the Okanagan Basin. A very attractive scheme is available for obtaining supplemental irrigation water from the Shuswap River in the Fraser River basin. This scheme would consist partly of a small diversion structure on the Shuswap River near Enderly, B.C., and an excavated channel across the Fortune Creek-Deep Creek saddle near Armstrong, B.C. Water would be diverted from Shuswap River through this channel to Okanagan Lake.

Storage would be available on Shuswap River at Mabel Lake if required. However, it would appear that flood flows of the Shuswap River would amply supply all diversion requirements. Okanagan Lake could provide the necessary storage and regulation of diverted flows.

2. Fraser River Diversion to Mica Reservoir

It has been suggested that possibilities might exist for diversion of upper Fraser and Thompson Rivers into the Columbia basin at the head of the Canoe River branch of the proposed Mica Reservoir. No detailed studies have been carried out to investigate these possibilities. It is highly doubtful that such diversions would yield sufficient benefits to offset the obviously high cost of development. Large dams would be required to back water across the drainage divide, and objections to flooding of the spawning grounds in the upper Fraser and Thompson Rivers could also be expected.

Water Resources Branch
August 1963

OCTOBER 31, 1963.

The Hon. Paul Martin, P.C.,
Secretary of State for External Affairs, Canada
House of Commons,
Ottawa

Dear Mr. Martin:

I have your letter of 8 Oct. 1963 in which you express certain general observations on some of the aspects of the proposed Columbia River Treaty which I had remarked upon in my letter to you of 23 Sept. 1963.

In regard to your observations, I have now had an opportunity to look up the relevant reports which have been made public and which are available to me and I now make the following further comment.

For convenience of reference, I have numbered the paragraphs of your letter as follows:

Your Page 1: 1 and 2

Your Page 2: 3, 4, 5, 6 and 7

(including Crippen Wright paragraphs)

Your Page 3: Para 7 (cont.) 8, and 9

Your Page 4: 10, 11, 12, and 13

Re your Para 2

I note that you agree on \$710 million as the total amount which the U.S. estimates would need to be expended to obtain, among other advantages, the same degree of flood control as could be given by the three Canadian storages, Mica, High Arrow, and Duncan. It seems to me that where we differ is that

you accept the position that the sum which has been allocated by the U.S. to flood control is a measure of the Canadian contribution. This is *not* my view because the U.S. in multi-purpose projects follow a principle that relieves the public of charges for flood control, which can be imposed on power with greater convenience and less public opposition.

The result is that the actual flood control benefit from the operation of the treaty storages is very much more than double the \$64.4 million present worth figure evolved by the negotiators.

May I repeat again that it is my *firm conviction* that the revised treaty or protocol should provide *specifically for a payment to Canada equal to half the damages prevented by the operation of Canadian storage* (IJC Principle) and that the formulae for arriving at this amount should be *open to re-negotiation* on demand as future experience may indicate. There must also be a minimum payment per acre foot of storage space in order to prevent abuse by the U.S. of the privilege of calling for drawdown to take care of impending floods of exceptional great magnitude which are forecast.

References to other points in regard to flood control relating to clauses in the treaty of doubtful or unacceptable intent are included in my letter to you of 23 Sept. 63 and in my CI of IA paper for their Spring, 1963, Journal, all of which, I submit, require the closest consideration.

Re your Para 3

I am very pleased to learn that you agree, even if only in a negative sense, that the ultimate authority for determination of projects in Canada on "International Rivers" rests with the Federal Government of Canada. This relieves some of the grave anxiety I have felt since I became aware of the terms of the agreement which you entered into with the Government of B.C. under date of 8 July 1963. I do hope you and your colleagues in the Government of Canada will be persuaded to take the next step and forbid or "decline assent" to projects which do not implement the principles of proper economic selection, and particularly those which sacrifice, or even seem to compromise, the sovereign right of Canada to control our own waters within our own territories.

Re your Para 3 and your reference to the table (in Para 243) on Page 102 of the ICREB Report of March 1959, which you indicate represents "The average system cost of energy", may I caution that these figures were compiled in a study directed to the selection of the best physical array of projects without regard to the boundary, as agreed by the ICREB at its first meeting in 1944 when this was established as a principle. The interest rate used was 3%, which is about the weighted mean of the actual rates of 2½ and 5% which has been indicated for Canada and the U.S. respectively.

In consequence, while the total *international* costs given in the table on Page 101 (Para 242) are within the limits of reasonably acceptable error, those allocated nationally in Para 243 are slightly high for the U.S. but between 40% and 50% too low for Canada.

Moreover, in this calculation, the downstream benefits of upstream storage continue to be included in the U.S. figures, that is, where generated. So the upstream state, Canada, receives no credit for the large benefits created by Canadian reservoirs. In regard to flood control, these mostly arise from the Canadian storages and are omitted entirely in the ICREB figures, perhaps, I venture to say, as part of the U.S. endeavour to minimize the very large benefits rightly attributable to this source. In the result, the statement in Para 242, in the conditions stated, is qualitatively correct (except in regard to flood control), *namely that the Dorr diversion plan produces the lowest cost incremental power, that is the highest system benefits to power*. However, these incremental costs differ only slightly in the other plans.

In contrast, in Para 243, the figures for power benefits and power costs assigned to Canada are both much too low and there is no assurance that the ratio has any real meaning at all.

The great advantage to Canada of the Dorr plan is that the waters originating in the East Kootenay are conserved in Canadian storages and remain under the sovereign jurisdiction and control of Canada, whereas both the other plans include Libby in Montana and by the treaty, the physical and jurisdictional control of this storage in Libby and its refill are to be exercised by the U.S. without restriction. Canada thus lacks an *assured* plan on which to base *firm* power output at the West Kootenay plants or to give flexibility as would be provided by Dorr-Bull River-Luxor in the operation of the great plants at Mica, Downie, Revelstoke Canyon, and Murphy.

Moreover, under the proposed treaty, with the East Kootenay supply reservoir in the U.S., the U.S. at any time, in any amount, is free to divert these flows probably by way of Bull Lake to the Grand Coulee reservoir for onward delivery to California for consumptive agricultural purposes. I submit that it is a *real responsibility* of the Government of Canada to prevent such a disaster to Canadian interests.

Subsequently, this best international plan developed by the ICREB has been studied by the IJC in its national aspects in regard to interest rates and in regard to the principles which should be adopted for the equitable sharing of the immense benefits which the U.S. will receive from the operation of the Canadian storage to power and flood control. I believe that these subsequent studies have confirmed the superior merit of ICREB plan Sequence IXa in all aspects.

Re your Para 3 (cont.) and also Paras 4 and 5, quoted from Crippen Wright interim report No. 2.

Since this report is labelled interim and is No. 2 in that series, I would think it is among those which were received in the summer of 1959 and, as stated in my letter to you of 23rd September, 1963, found *not* to justify modifications in the ICREB Report of March 1959. Certainly I would not be prepared to subscribe to these generalizations until the reasons for the conclusions advanced have been received and considered and this I will be glad to do if a copy of the full report can be provided. However I would think it evident that this report was made before the recent studies on High Arrow in which the investment cost has been increased from the ICREB preliminary figure of \$66.4 million to \$124.0 million, with probably further increases to come. In consequence of this, it would seem that the basis of the statements attributed to Crippen-Wright have been out-moded.

On engineering problems as complex as those we have under study it is manifestly *wrong* to base conclusions and discussion on summarized statements of opinion taken out of the context of the reports without a full understanding of the bases and parameters of the reports in question.

Re Your Para 6

The developed and average heads on the Columbia in the Copper Creek and Dorr plans are stated or estimated as follows:

| | Gross Head | Estimated Average | Diversion (MAF) |
|---------------------|------------|----------------------|--------------------|
| Copper Creek | | | |
| Seq. VIII | 1299 ft. | 1143 ft. | 2.6 |
| Dorr | | | |
| Seq. IXa | 1279 ft. | 1165 ft. | 5.8 |
| Difference | | | |
| Dorr increase | -20 ft. | +22 ft. | |

It is understood that the Crippen-Wright proposals were analogous to Seq. VIII with 1.5 maf in place of 2.6 maf. Thus in these proposals, the average head at Mica would be less well maintained for a given discharge.

I would observe further that the average annual release from storage at Mica is 3.93 maf while under the treaty, if the average annual release may be 7.0 maf, this would nearly double that contemplated in the ICREB report. If so, the average head at Mica in Seq. VIII under the treaty will be much less than I have indicated above.

Re your Para 7

In regard to irrigation in the East Kootenays, the Department of Agriculture report states that some 300,000 acres of irrigable land could be substituted for 26,000 acres of bottom land of no better quality which would be submerged by the reservoir. In Sequence IXa these new lands are adjacent to the reservoirs, which will be high in the early summer and thus facilitate local pumping.

The report in question was obtained by the then Minister of Agriculture at my request, and at the time I had the opportunity to discuss the proposal with the technical officers concerned in the Department of Agriculture and in P.F.R.A., and I am assured that the project has merit. I believe that this would be confirmed by competent engineering consultants if the matter is referred for advice before commitments are made to the ratification of the treaty or the protocol.

Re your Paras 8 and 9

Re your reference to further studies by Montreal Engineering Company during the fall and winter of 1961, which you say give strong support to the treaty projects, I have not had access to these studies. I would be pleased to have an opportunity to study these reports.

Re your Paras 10 and 11

In Para 10, why *unavoidable*?

I appreciate your recognition that the views I have expressed are based on conviction. These views are derived from long study over many years and I believe that what I have been stating is correct. I certainly have endeavoured to be entirely objective in my presentations of the deficiencies which I am convinced exist in the present proposed treaty. I express the very sincere hope that you will be able to correct these matters or in cases of doubt that these will be resolved and Canadian rights not left open to dispute.

I can assure you that the results you obtain will be examined with the closest and most sympathetic attention to the best interests of Canada, which I am sure is your intention also, even if we may differ in the method to be adopted.

I am obliged to you for:

- (a) The paper giving revised Benefit/Cost storage studies in various combinations, dated September, 1963
- (b) The NA and NR paper on possible diversions from the Columbia to the Eastern slope of the Rockies. All these have long been known to the IJC, but it is very convenient to have them listed with available data.

In this connection, I hope you have a copy of the paper on "Energy and Water", presented at Calgary on October 9, 1963 by the General Manager of the Saskatchewan Power Corp. This paper is based on engineering studies carried out by Crippen-Wright consultants and I believe the data would command confidence.

I mention the plans for the use of Kootenay and Columbia water particularly because these are complementary to the Seq. IXa plan with which I have concerned myself. I hope these forecasts and studies will help in establishing the conviction that the construction of the East Kootenay storages and the consequent elimination of Libby are *essential* Canadian interests.

Yours very sincerely,

A. G. L. McNaughton

OTTAWA, Ontario, November 21, 1963.

General A. G. L. McNaughton,
393 Fernbank Road,
Rockcliffe Park,
Ottawa, Ontario.

Dear General McNaughton:

I wish to thank you for your letter of the 31st of October and your further comments on the Columbia River Treaty. I believe that the exchanges of views which we have had over the past months have been of considerable value in placing the Treaty and the arguments concerning it in their proper perspective. One example perhaps is the question of the Treaty flood control and the cost to the United States of providing similar control by projects of their own. We seem agreed now that an expenditure within the United States of some \$710 million will provide not only flood control but also power and other benefits. The exact portion of this expense which is properly chargeable to flood control is of course debatable, but the very substantial power benefits which the United States would obtain from almost 10 million acre-feet of storage and at-site generating potential of over 1.2 million kilowatts would be capable of carrying a major portion of the costs. As I noted in my last letter, one of the projects making up the \$710 million expenditure is already under construction in the United States and therefore the cost of their alternative to the Treaty would now be less than \$600 million. With two further projects under serious consideration it is apparent that the incremental cost of their unilateral plan could be very substantially reduced within the next year.

I have noted with considerable interest your comment on the report of the International Columbia River Engineering Board and agree that the limitations of that report necessitate extreme care in its use. However, the problem of interest rates which you have noted would not alter the conclusion reached on page 102 of the report that a plan of limited diversion produces the least costly increment of power in Canada. In fact, a higher interest rate would have the greatest detrimental effect on the plan of development requiring the largest capital investment which in the I.C.R.E.B. report was the maximum diversion plan.

You advocate in your letter the adoption of the principles of proper economic selection. It is on the basis of these principles that I find it very difficult to justify the proposal for the flooding of the East Kootenay Valley. The incremental energy benefits do not seem to support the acceptance of the incremental costs, particularly when compared to a proposal for limited diversion at Canal Flats. The question therefore remains: are we to strive to obtain this last increment of Columbia River energy in spite of its cost when the owner of the resource is unwilling to do so and the incentive for the United States to provide the essential co-operation is considerably less now than it was three years ago? At that time the record indicates they were only willing to accept the Canadian East Kootenay dams into a co-operative Treaty at terms which were, and still

would be, completely unacceptable to Canada. It would appear that the only argument at this time for the East Kootenay projects is one of retaining control of the Kootenay River water, and even that argument is countered by the rights given Canada under the Treaty to make diversions in 20, 60 and 80 years time which will achieve the same extent of diversion and degree of control which you now seek.

Of particular interest to me are your comments on the possibility of the United States diverting water from the Kootenai River before it re-enters Canada and transporting this water to meet consumptive needs as far south as California. Aside altogether from the economics of such a plan, the project would have to be undertaken by the United States with the full knowledge that the Columbia River Treaty gives Canada the right within 80 years time to divert all but 1000 cfs of the Kootenay River in Canada and with no Treaty provision for any liability for damage incurred downstream in the United States. Very little water would be left in the river to supply the suggested United States diversion works.

Also with regard to United States diversions out of the Kootenay River, I must assume that these diversions would be undertaken for consumptive uses, as the Columbia Treaty expressly forbids diversions for power purposes by either country with of course the one exception of phased Kootenay River diversions by Canada. If as you suggest the United States is free to make consumptive diversions at any time and in any moment, I conclude that you agree that the Columbia River Treaty does not prevent consumptive diversions by either country and that Canada would, therefore, be free to make substantial diversions eastward to the Prairie Provinces for such purposes.

Perhaps one final point upon which I would appreciate clarification is your reference to studies by the International Joint Commission of the proposals of the I.C.R.E.B. I am aware of course of the I.J.C. Principles, but was unaware of any other Commission report to the Government. If you could provide me with the particulars of that report and whether or not it preceded or was superseded by the Commission's report on Principles, I would have a better appreciation of the importance which you place on it.

The quotations from the Crippen-Wright Engineering report which I included in my letter of October 8th can be found in both the final report by that consulting firm as well as their Interim Report No. 2. While a spare set of their complete report is not available, I am forwarding for your information a copy of the interim report dealing with Kootenay River diversions. With the exception of minor editorial changes the "Summary of Findings and Recommendations" of the interim report is repeated in the final report. As the interim report deals only with the economics of diversion proposals and does not consider the advantages or disadvantages of an Arrow Lakes dam, the recent increase in the cost of that structure should not alter their conclusions in any way. However, increased investment in recent years in the Upper Columbia and East Kootenay valleys, particularly in the vicinity of Windermere Lake, would tend to strengthen the arguments for limited diversion. I would appreciate the return of the Crippen-Wright report at your convenience.

I am also attaching at your request letters from the Montreal Engineering Company which report on their investigations of the freedom of operation for at-site power generation in Canada under the terms of the Treaty. I believe you will find their conclusions quite interesting.

Thank you once again for your comments.

Yours sincerely,

Paul Martin.

December 12, 1963

The Honourable Paul Martin, P.C.,
Secretary of State for External Affairs, Canada,
House of Commons,
Ottawa

Dear Mr. Martin:

On 29 November 1963 I received your letter dated 21 November 1963, together with Volume 2 of the Crippen Wright interim report; also copies of two letters from Montreal Engineering Company dated 23 October 1961 and 7 December 1961 respectively, which were enclosed.

As on previous occasions, with a view to facilitating comment, I have numbered the paragraphs of your letter consecutively from the beginning.

Re your Para 1

I would observe that the new U.S. projects to which you refer are *not on the line of flow of floods* originating on the Upper Columbia, and, in consequence, in the U.S. allocations to tributary basins, are not substantially competitive with the Canadian storages on the Columbia, which are unique in the protective service they can provide to the U.S. If the Canadian storages are *not* built, then Grand Coulee *must* be operated for flood control, and heavy power losses will result at this important site.

In your comments on flood control in this paragraph or elsewhere, I fail to find any reference to the very important questions which I raised in regard to this aspect of the treaty on Page 2 of my letter to you of 31 October 1963, including my reference to my earlier letter to you of 23 September 1963 and to my article in the CI of IA Journal, a copy of which I sent you.

Let me assure you these are questions of vital significance to the proper interests of Canada, *all* of which call for protective action in the revision of the treaty or its *rejection*.

Re your Paras 2 and 3

Regarding your agreement that the limitations of the ICREB Report necessitate extreme care in its use: Since the report clearly concludes that on physical and economic factors there is little to choose between the three plans, I feel sure you will agree that the decision should rest on more fundamental considerations, such as the maintenance by Canada of the physical as well as the jurisdictional control over the operation of the storages. This control can only be achieved by placing as much of the storage as possible in Canada at the highest elevation which supply permits. This is a characteristic of the Dorr Plan, but is lacking in the others.

In the last part of your Para 3, you speak of the *rights given to Canada* under the proposed Columbia River Treaty to divert in 20, 60, and 80 years as in Article XIII, Paras (2), (3), and (4).

I must register the strongest *objection* to the misconception evidenced by your use of the word "given". Article XIII gives Canada nothing! It takes away and *surrenders* a position which for over 50 years has come to be accepted as a basic right in Canada as it has in the United States since its earliest days. This is a right which was recently re-affirmed and insisted upon by the U.S. in the IJC Waneta Order. In this, perhaps I should mention, you should know that the U.S. enforced Article II of the Boundary Waters Treaty to the extent of maintaining their exclusive control over stored waters on the Flathead, which they could capture at Hungry Horse or elsewhere, by invoking Article IV of the BWT to deny Canada the construction of Waneta by reason of a very minor matter—the flooding of some 2-2/5 acres of undeveloped, non-productive land in the U.S.

Apart from the time limits imposed in Article XIII, which would delay action in a matter which has now become of immediate importance, may I suggest that in dealing with the United States, *a future right and its exercise are two quite distinct matters*, as I have learned painfully in a decade of first hand experience. In this case for example, under Article XII (5), you cannot even build Dorr without U.S. consent, and I forecast that the price set on this consent will be so high that any project to do so will be made quite uneconomic. May I observe that Dorr is necessary to exercise the right which you say is given to divert from the Kootenay.

Moreover, under Article XIII (1) you must have U.S. consent to divert "for *any* use, other than a consumptive use" out of the Columbia River basin. No major project to divert to the Prairies, for example, can be other than a multi-purpose use, in which power generation is a major component. Again I forecast that the price of U.S. consent to the power aspects of a multi-purpose diversion will be prohibitive. I suggest that the U.S. has prepared for the enforcement of this purpose by the provisions of Article XVIII Para (3) by which "Canada and the U.S. shall exercise due diligence to remove the cause of . . . any injury, damage or loss occurring in the territory of the other as a result of *any* act . . . under the Treaty".

A diversion out of the Columbia basin will, without a doubt, be construed as an *injury* to the U.S. because of the right given the U.S. under the treaty to build Libby, and such a diversion would cause damage and loss in the U.S. exceeding benefits. So whether or not a right has been given to divert for consumptive use, or any other use, its exercise will be subject to consent, and if this has not been given, the damages could be prohibitive.

In the result, in the practical conditions to be met in the Columbia River basin, this is an iniquitous arrangement under which Canada is to be bound and the U.S. in fact left free. Moreover, it is well that you should recall that under Article XVI, Canada will have agreed to the settlement of disputes by the IJC or otherwise under *the* code of law provided by the treaty itself, including the *intent* expressed in the Preamble. Note particularly Para (4) of this article, which provides that decisions of the IJC or other forum shall be accepted as "*definitive and binding*" and that the parties "*shall carry out any decision*".

Re your Paras 4 and 5

From the foregoing, you will note my warning that once Article II of the BWT has been superseded, or laid to rest, if you will, and despite the fact that Canada is stated to have certain rights to divert from the Kootenay to the Columbia, Canada has *not been relieved* of responsibility for injury or damage occasioned thereby. In fact, under the treaty, you must know, I repeat, that the IJC, or other tribunal, has been vested with jurisdiction to determine injury or damage, and such decision Canada has contracted in advance to accept as "*definitive and binding*" under Article XV (4).

May I say that your assertion in your Para (4) that the U.S. would *not* divert from the Kootenai, that is the Libby reservoir, because of the right *given* to Canada to divert upstream "with no treaty provision for any liability for damages incurred downstream in the United States" is entirely illusory as I have explained above.

I say to you Mr. Martin, as Secretary of State for External Affairs, Canada, with the greatest seriousness, that if this proposed Columbia River treaty is ratified, Libby will be built by the U.S., and for all time thereafter, this action, made possible by yourself and your colleagues in the Government of Canada, will have deprived Canada of the beneficial use and control over the waters of Canadian origin in the East Kootenay. The only benefit we will receive will be what may come to us as a by-product, of little account, of the regulation

of Libby, which is vested in the U. S. to be carried out without restraint other than the minor requirement presented in the IJC Kootenay Lake Order regarding levels.

May I say also that even if the treaty or protocol should remove the right of the U.S. to claim damages for our East Kootenay diversion, the U.S. having invested some hundreds of millions of dollars in the construction of Libby and Kootenay Falls downstream, can be expected to exert the greatest political, economic, and moral pressure to *persuade* Canada to forego any plans for diversion.

My counsel to you, as an old friend of very long standing, is to withdraw from this dangerous imbroglio, while yet you may, for the sake of Canada.

Re your Para 6

In response to your inquiry regarding reports made by the IJC to the Governments: The report of the International Columbia River Engineering Board of March, 1959, was made available to the two governments for preliminary information by mutual consent of the U.S. and Canadian Sections IJC. The Commission's discussions of this report were recorded verbatim in the IJC Proceedings, and extend over many meetings. Copies of these have also been made available to the two governments.

As Chairman of the Canadian Section IJC, I have had the privilege of appearing before the House of Commons Committee on External Affairs to keep the members currently informed. This evidence appears in the "Minutes of Proceedings and Evidence" of the Committee.

In response to letters from the Governments dated 28 and 29 January 1959, the Commission presented on 29 December 1959 its report on "Principles for determining and apportioning benefits from the Cooperative use of Storage of Waters and Electrical Inter-connection *within the Columbia River System*".

Subsequently, the Governments undertook direct negotiations and the Commission, as such, was not called upon for further reports.

Re your Para 7

I am obliged to you for the loan of the Crippen Wright Report, Volume 2 of the interim edition, with certain corrections you say to make it correspond with the final edition. I have read this volume 2 with close attention and I find that my memory of it as I reported on Page 4 of my letter to you of 31 October 1963 is substantially correct.

I note in respect to the summary of findings on Page 2 of your letter of 8 October 1963 that you reproduce No. 4 and No. 5, but that you omit No. 3 which reads:

"By creating storage reservoirs in the upper valley of the Columbia so as to back water to Columbia Lake, the diverted flows can be increased, conveniently and economically, beyond 5,000 cfs; it is recommended that they be increased up to 10,000 cfs from the Kootenay and 1,500 cfs from Findlay Creek, which represents virtually complete diversion".

It would seem that these recommendations are not consistent.

Re your Para 8

I am obliged for the copies of the Montreal Engineering Company letters of 23 October 1961 and 7 December 1961 on the conflict of regulation for at-site generation in Canada and downstream benefits to generation in the United States (See Paras 8 and 9 of your letter to me of 8 October 1963 and my reply on Page 6 of my letter to you of 31 October 1963). I have read these letters with great care to make sure of their meaning. They confirm my anxieties that the result of regulation of Canadian flows being assumed in your discussions of the proposed treaty rests on a very slim basis of established fact and most on "short cuts", it would appear, from computer studies carried out by the U.S. and directed to "optimizing" American production.

There is no indication that any comprehensive computer studies have been carried out on the effects on supply to the Canadian load of regulation of the three treaty storages under the conditions specified in the treaty. In consequence, there is *no real assurance* as to either the downstream benefits to be delivered to Canada and—of increasing importance with the passage of time—of the actual benefits to Canadian at-site generation which we will be able to obtain.

I again say that in order to obtain an equitable solution of these matters the treaty should be corrected in two important respects; first, to *insure Canadian jurisdictional and physical control* of waters of Canadian origin in Canada, and second, to amend the objective of storage operation in Annex A, Paras (6), (7), and (8) to read "*to optimize generation at site and downstream in Canada and including the Canadian half-share of the benefits in the U.S.*"

If any adjustments to the results of this procedure are desired by the U. S., they can be arranged for in the "interconnection agreement" provided for in Annex A (7), it being understood, of course, that Canada will be compensated for any loss and receive a half share of the net benefits which result.

I note also in the Montreal Engineering Company letter of 7 December 61 the increasing difficulties which will result from the reduction in the volume of Canadian storage if High Arrow is abandoned. Such a probable eventuality emphasizing the need to return to Sequence IXa with its greatly increased flexibility because of the Dorr-Bull River-Luxor storage being available *upstream* from Mica in addition to Murphy Creek below and the additional storage on Kootenay Lake as well as Duncan. This arrangement dispenses with Libby and still provides *all* the stated U. S. requirements for regulation for power and for *primary* flood control.

I would hope you would cause a computer study of this plan also to be carried out.

I note the reference, in Para 2 of the Montreal Engineering Company letter of 7 December 61, to certain curves showing the relation of downstream benefits to total Canadian storage volume. It is clear that the opinions expressed by Montreal Engineering depend in large measure on these curves and on this account I would be interested to examine them.

May I mention that similar studies were originally developed at my instance in the first IJC work group and I was never satisfied with the information provided by the U. S. Army Engineers. Similar errors continue to be present in the publications of Krutilla, which minimize the credits to Canada.

If you have no objection, I propose to retain the Crippen Wright Report for further study and will then return it to you.

Yours very sincerely,

A. G. L. McNaughton

OTTAWA, December 16, 1963.

Dear Sir:

In Mr. Martin's absence, I wish to acknowledge receipt of your letter of December 12 and tell you that it will be brought to his attention immediately upon his return.

Yours sincerely,

J. D. Edmonds,
Special Assistant to the Minister.

General A. G. L. McNaughton,
Fernbank,
Rockcliffe,
Ottawa, Ontario.

OTTAWA, January 21, 1964.

Dear General McNaughton:

The long, and sometimes rough, course of the Columbia River negotiations seems to be reaching its end. It is only appropriate that I should now personally send you a folder recording the results.

Believe me, General, I have made every effort to take account of the many very good points that you have made to me over the past several months in our conversations and correspondence. I am satisfied that the settlement which we are now making is the best attainable if the Columbia is to be developed at all. Whatever you may think of the outcome—and I hope that you will regard it as satisfactory—you can be sure that I have valued your advice. As the Government's principal negotiator in these closing stages I have had to take the responsibility of judging what was negotiable and then I have had to bargain as hard as possible to get acceptance of our point of view. Generally, I think we have been successful. All in all, I am satisfied that the agreement which has been reached will be of great benefit to Canada and will fully protect our sovereignty.

Warmest personal regards,

Yours sincerely,

P. Martin

General A. G. L. McNaughton,
Fernbank,
Rockcliffe Park,
OTTAWA.

JANUARY, 24, 1964.

The Hon. Paul Martin, P.C., M.P.,
Secretary of State for External Affairs,
House of Commons, Ottawa.

Dear Mr. Martin

I write at the first opportunity to thank you for your note of 21 Jan which was delivered to me by Registered Mail on the morning of 23 Jan. However the Press showed be a copy immediately after your release on 22 Jan so I was able in a quick reading to obtain some idea of the content.

It will I am sure, not surprise you that I shall maintain my opposition to Libby and High Arrow and I hope that in the further discussions of these questions I may yet convince you to agree.

As regards other aspects you mentioned I am giving the most careful study to the effect of the terms of the Protocol and I do hope it will turn out that your confidence, that the Sovereignty of Canada has been fully protected will be justified.

In regard to the improvement in economics, I gather that these derive primarily from the new streamflow records which have been adopted and I am endeavouring to obtain this information so that I can adjust the IJC calculations accordingly for comparison.

In conclusion may I say I do appreciate your reference to the various points I have brought to your attention in criticism of the 17 Jan 61 Treaty and the consideration which clearly you have given to these very important matters.

I value deeply the warm personal regards you express and I hope in one further debate we may contribute to the solution which best satisfies the interests of Canada.

Very sincerely,

A. G. L. McNaughton.

JANUARY 27, 64

N. A. Robertson, Esq.,
Under Secretary of State
for External Affairs
Ottawa

Sir:

I refer to the Secretary of State's letter to me dated 21 Jan 64 and to the papers enclosed therewith which made reference to the stream flow records for "the thirty year period commencing July 1928" which have been substituted for the flows for the 20 year period specified in para 6 of Annex B to the proposed Treaty on the Columbia River dated 17 Jan 1961.

I would be greatly obliged for 3 copies of these records so that I can pursue the studies I have indicated to Mr. Martin that I have in hand. I assume that these data will embrace for each of the three basins namely the Upper Columbia, the Kootenay and the Pend d'Oreille which are involved, the mean monthly flows at the various dam sites in Canada and at Libby in the U.S. for each of the water years of the new period together with totals for each year and the average for the period.

Yours faithfully,

A. G. L. McNaughton.

FEBRUARY 10, 1964.

Dear General McNaughton:

In the absence of Mr. Norman Robertson I am replying to your letter of January 27 regarding the stream flow records involved in the most recent Columbia River arrangements.

We are very pleased to let you have on loan one of the few available copies of the Report on the Extension of Modified Flows Through 1958. You may, of course, be able to get extra copies for your permanent retention from some officer of the Columbia Basin Inter-Agency Committee, the composition of which is indicated on the inside of the front cover of the Report. Meantime, I trust that the enclosed copy will be of assistance to you in connection with the studies which you are carrying out.

Yours sincerely,

A. E. Ritchie.

General A. G. L. McNaughton,
Fernbank,
Rockcliffe Park,
OTTAWA.

OTTAWA, February 3, 1964.*

My dear General:

Today is the day for the commencement of the examination by Parliament of the Columbia River Treaty and Protocol. I welcome this examination and

I can assure you that I shall do my part to see that all of that proposed arrangements are subjected to the most careful scrutiny. I am enclosing for your information the very full statement which I shall be making this afternoon.

As you will see, I have attempted to present the issues in considerable detail and in a non-partisan manner. I hope that it will be possible to carry on the debate in this spirit.

Incidentally, my tribute to you on Page 15 of this text is intended very sincerely. I think you know of the high regard in which I have always held you. I can assure you that my regard has been enhanced by my appreciation of the pioneering work which you did in formulating the IJC principles and particularly the principles relating to the sharing of downstream benefits. The country is indebted to you for the contribution which you have made to the arrangements which are now being submitted to Parliament for its approval.

Warm regards,

Yours sincerely,

Paul Martin.

Gen. the Honourable
A. G. L. McNaughton,
393 Fernbank,
Rockcliffe Park,
OTTAWA.

*Letter incorrectly dated. Should read March 3, 1964.

MARCH 5, 1964.

Dear Mr. Martin,

I write to thank you for your note delivered to me by special messenger on the late evening of 3 March 1964, and with which was enclosed a copy of the "Statement on the Columbia River Treaty and Protocol" which you were to deliver that day to the House of Commons.

I have since read your manuscript with care and close attention, and I very much regret that I am unable to find in it evidence of correction to the many points in the Treaty giving rise to anxiety as regards the protection of the vital interests of Canada.

I note that in a number of places you have expressed similar anxieties to those which I have brought to your attention, but when I have come to the executive clauses of the Protocol as now drafted I find that *no* corrections have in fact been made to limit the extravagant powers which were to be vested in the U.S. by the Treaty. In fact, in a number of cases, by the use of imprecise language it appears that the damaging effects on Canadian interests have been enhanced.

I am very disappointed that despite my best endeavours, over many months, in our correspondence I have not been able to make these dangers understood by you.

I do hope we may make some progress when we come to the argument in the External Affairs Committee. Anyway you may be sure that I will give my best endeavours to this end.

Very sincerely,

A. G. L. McNaughton.

The Honourable Paul Martin, P.C.,
The Secretary of State for External Affairs,
Canada.

HOUSE OF COMMONS

Second Session—Twenty-sixth Parliament

1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 3

THURSDAY, APRIL 9, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESS:

The Hon. Paul Martin, Secretary of State for External Affairs; Mr. G. M. MacNabb, Water Resources Branch, Department of Northern Affairs and National Resources; Mr. E. R. Olson, Department of Justice.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--------------------------------|----------------------------|----------------|
| Basford, | Fleming (<i>Okanagan-</i> | Macdonald, |
| Brewin, | <i>Revelstoke</i>), | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Forest, | Martineau, |
| Cameron (<i>Nanaimo-</i> | Gelber, | Nielsen, |
| <i>Cowichan-The Islands</i>), | Groos, | Patterson, |
| Cashin, | Haidasz, | Pennell, |
| Casselman (Mrs.), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Langlois, | Turner, |
| Dinsdale, | Laprise, | Willoughby—35. |
| Fairweather, | Leboe, | |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee.

ORDER OF REFERENCE

WEDNESDAY, April 8, 1964.

Ordered,—That the names of Messrs. Langlois, Nielsen and Basford be substituted for those of Messrs. Plourde, Macquarrie and Byrne respectively on the Standing Committee on External Affairs.

Attest.

LÉON-J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

THURSDAY, April 9, 1964.
(5)

The Standing Committee on External Affairs met at 10.00 o'clock this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Basford, Brewin, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Herridge, Kindt, Klein, Laprise, Leboe, Macdonald, MacEwan, Martineau, Matheson, Nielsen, Nesbitt, Patterson, Pennell, Ryan, Stewart, Turner, Willoughby (30).

In attendance: The Honourable Paul Martin, Secretary of State for External Affairs; Mr. Gordon Robertson, Clerk of the Privy Council; *From the Department of External Affairs:* Mr. A. E. Ritchie, Assistant Under-Secretary, Mr. H. C. Kingstone, Legal Branch; *From the Department of Northern Affairs and National Resources:* Mr. G. M. MacNabb, Water Resources Branch.

The Chairman noted the presence of a quorum.

The Chairman announced that correspondence pertaining to the Columbia River Treaty has been received from the following: Mr. D. D. Morris, Vice-President and General Manager, Consolidated Mining and Smelting Company of Canada, Ltd., Trail, B.C.; Mr. R. Deane, P. Eng., Rossland, B.C.; The Hon. R. W. Banner, Q.C., Attorney General, and The Hon. R. G. Williston, Minister of Lands, Forests and Water Resources, Victoria, B.C.

The Minister answered questions, assisted by Mr. MacNabb.

At 12.30 p.m., the Committee adjourned until 4.00 p.m. this day, on motion of Mr. Turner.

AFTERNOON MEETING

(6)

The Committee reconvened at 4.00 p.m., the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Cashin, Davis, Deachman, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Herridge, Kindt, Laprise, Leboe, Macdonald, MacEwan, Matheson, Nesbitt, Patterson, Pennell, Pugh, Ryan, Stewart, Turner, Willoughby (26).

In attendance: The same as at the morning sitting and Mr. E. R. Olson, Department of Justice.

The members resumed questioning of the Minister, who was assisted by Mr. MacNabb and Mr. Olson.

Mr. MacNabb tabled a document entitled "Water Power Resources in the Columbia River Basin in Canada: Investigations by the Water Resources Branch". On the suggestion of Mr. Turner, it was agreed that the text of this

document be incorporated in today's Proceedings. (*See Appendix C*). The members agreed that Mr. MacNabb would be questioned on this document at tomorrow's meeting.

Mr. MacNabb also tabled Appendices 1 to 5 of the above-mentioned document which could not be printed because of their great volume and were therefore left with the Clerk for reference by the Members.

In response to a question from Mr. Herridge, Mr. MacNabb agreed to place on the record at a later meeting the totals of costs involved in land acquisition, clearing of reservoir areas, relocations of railways, highways, secondary roads, communities and other dislocations connected with the various projects.

Mr. MacNabb also deposited with the Clerk an album collected in 1957-58, in six volumes, of every building that would be affected by the Arrow Lakes reservoir.

At 5.30 p.m., the Committee adjourned until 9.00 a.m., Friday, April 10, 1964.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

THURSDAY, April 9, 1964.

The CHAIRMAN: May I call the meeting to order.

Since our last meeting correspondence has been received from D. D. Morris, vice president and general manager of Consolidated Mining and Smelting Company of Canada Limited, Trail, British Columbia; Mr. R. Dean, professional engineer, Rossland, British Columbia; Hon. R. W. Bonner, attorney general of the province of British Columbia, and the Hon. R. G. Williston, minister of lands, forests and water resources of the British Columbia government.

This morning we will continue with the evidence of the Secretary of State for External Affairs. Mr. Martin will be assisted by some of the departmental experts who are here this morning.

As Mr. Martin has completed his statement, questions by members of the committee may be put at this time.

Mr. BREWIN: Mr. Chairman, before I proceed I would like to apologize for the state of my voice; if it appears gruff it is not because I am irritated with the witness, and if it appears squeaky it is not because I am intimidated by the witness.

Mr. NESBITT: Mr. Brewin, you have company this morning.

Mr. BREWIN: It is just a physical problem I have.

Mr. Chairman, I would like to confine my questions to the witness largely to the subject of diversion and some of the implications of the treaty as well as perhaps some of the legal matters arising out of them.

Perhaps, first of all, I can call the minister's attention to the blue book or the presentation which he gave us, and I am referring specifically at this time to page 14, the second sentence in the second paragraph, where it says that the object of this presentation is to indicate that the treaty meets all the foreseeable technical and legal problems of protecting the national interest in a vital bi-national river.

Hon. PAUL MARTIN (*Secretary of State for External Affairs*): Yes.

Mr. BREWIN: I am merely calling that to Mr. Martin's attention because I want to ask him about what seems to me a foreseeable legal problem affecting the national interest.

Now, if I may just indicate the line of questioning I wish to pursue, Mr. Martin, article XIII of the treaty provides in paragraph 1 that there shall be no diversion without the consent of the other parties for any use other than a consumptive use, and I would like, Mr. Martin, to develop the meaning of that phrase in respect of other than a consumptive use. You already have told us that consumptive use is defined in article I of the treaty.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: In order that my questions will be intelligible I would like to refer to the definition in article I, which is on page 116, paragraph (e), where it says: "consumptive use" means use of water for domestic, municipal, stock-water, irrigation, mining or industrial purposes but does not include use for the generation for hydroelectric power."

Mr. MARTIN (*Essex East*): No.

Mr. BREWIN: You already have called our attention to that clause.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: And, to begin with, I put this to you: the right to divert for these purely consumptive purposes or use is clear; there is no doubt about that, as we have that right in this treaty. That also is confirmed by the protocol.

I put to you that the right to divert for the generation of hydro electric power is excluded and we do not have that right by the treaty. That is clear too.

Mr. MARTIN (*Essex East*): It is clear provided, of course, it is understood we are talking about primary use. There is not any doubt under the treaty that either party may divert for irrigation purposes which come within the definition of consumptive use. Now, after the water is used for the primary purpose, normal irrigation or consumptive use, it then, I would argue, could be used for power purposes. But, what is important is the clear right of diversion for consumptive use; and if the power is produced from a quantity of water which it is justifiable to divert for consumptive use in the particular case, that, in my judgment, as a matter of sensible interpretation, would not affect the validity of the diversion.

Mr. BREWIN: This is a matter I want to pursue, because it is important. I see some ambiguity where apparently you do not, and I would like to clear it up. What I would like to put to you—and I think there is no doubt that you will agree—is that if the major purpose was for the generation of hydro-electric power that is excluded by the treaty.

Mr. MARTIN (*Essex East*): That is clear.

Mr. BREWIN: There is no doubt about that.

Mr. MARTIN (*Essex East*): That is clear.

Mr. BREWIN: Quite clear.

Mr. MARTIN (*Essex East*): But I would add, as I said yesterday, if it was a question of use of the water for primary power purposes the consent of the owner of the resource would be a very important factor, and I ask you to consider whether it is practicable to suggest that British Columbia or any other province would be ready to allow water to go from its territory for that purpose.

Mr. BREWIN: I appreciate that point and I will deal with it later on. I want to confine our discussion, if I may, to the question of the use which is permitted and the use which is prohibited under the terms. So far, I think we agree there is one clear case where it is solely for domestic, municipal purposes, or irrigation, and there is the other clear case where it is solely for hydroelectric power, and I want to concentrate your attention on what might be called a multiple use.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: That is, where the use might be partly for irrigation purposes, municipal, and so on, and partly for hydroelectric purposes, and I want to suggest to you that there is some ambiguity or difficulty about that particular multiple purpose. Do you not agree?

Mr. MARTIN (*Essex East*): Do you mind if I just make another comment?

Mr. Brewin, I think you would be more comfortable if you would sit down. However, you may stand, if you wish; it is up to you.

Mr. BREWIN: If you would be more comfortable if I sat down I would be delighted.

Mr. MARTIN (*Essex East*): I just do not want you to feel that I am in the accused's box rather than the witness box. Knowing of your formidable legal prowess I feel a little ill at ease at the moment.

Mr. BREWIN: I want you to be as comfortable as possible because I want to get to the root of this matter.

Mr. MARTIN (*Essex East*): It is a very important matter.

Mr. BREWIN: I will sit down and if my tone is in any way offensive I hope you will understand.

Mr. MARTIN (*Essex East*): Your tone could never be offensive.

Mr. BREWIN: I do want to get to the bottom of this matter, you understand that?

Mr. MARTIN (*Essex East*): This is a very deep river.

Mr. BREWIN: It certainly is.

Mr. Martin, may I put the situation this way. I think you have already twice today said that if the primary purpose was for what might be called consumptive use, domestic irrigation and so on, in your view that is permitted by this treaty.

Mr. MARTIN (*Essex East*): May I call your attention, Mr. Brewin, to my letter to Premier Lloyd dated December 4, 1963, which undoubtedly you have had an opportunity of examining. I think that your position was stated to him clearly in that letter, and as he developed some of the points that undoubtedly are in your mind, it might be well at the beginning of this particular discussion—and that is really what this is between you and me—for me to refer to certain excerpts from my letter of December 4. I call your attention first of all to the statement I made to him in the third paragraph and in particular the last sentence.

The plain language of the paragraph does not admit of any meaning other than that diversion for consumptive use is not only excluded from the prohibition but also, by clear implication and necessary intendment specifically authorized.

Then the fifth paragraph states:

"With respect to the matter of the definition of 'consumptive use', the question whether a diversion is being made for a consumptive use or for hydroelectric power production or flood control is a question of fact to be determined having regard to all the circumstances surrounding the proposed diversion."

Then in the next paragraph I state:

"I am sure you will appreciate that it would have been impractical, as it is impractical now, to have asked the United States government to enlarge the definition so as to include hydroelectric power generation."

Then at the end of the page I state:

"It would obviously conflict with the purpose to have a general provision for diversion for hydroelectric power generation. In this connection I should point out that the mere fact that the diverted water produces electric power as a necessary incident of a diversion for, say, irrigation, would not, in the view of our advisers, change its characterization for the purpose of the definition from one carried out for consumptive use to one carried out for hydroelectric power production."

Mr. BREWIN: I see that point but I think you have put it in different form on a number of occasions. For instance in *Hansard* at page 581 Mr. Davis has referred to this definition of consumptive use, and Mr. Douglas said:

Will you read the rest of clause (e) of article I?

That is the one that excluded the use for the production of electric power. Mr. Davis then said:

I agree with the hon. member that that is very important.

Then Mr. Martin said:

If that is the primary consideration.

I take it you are taking the view that you have now put forward, that if the primary consideration was irrigation, or something of that sort and there was a hydro development to get the water over the hump of the Rockies as it were, or some hydro development further down the line, and if that were not the main or primary purpose of the diversion it would be permitted under the treaty? Is that your view?

Mr. MARTIN (*Essex East*): That is it exactly, yes.

Mr. BREWIN: Perhaps I could quote Mr. Davis further because I think this is a helpful statement. He says:

This is something else, but I think the conclusion of any impartial tribunal looking into this matter would be that this might be for consumptive use and not a definition of use for electric power. This can be debated, but I am quite confident in my own mind that the United States may wish to agree, using the same reasoning I have used now. I think this is a reasonable interpretation of our freedom, our ability to divert for consumptive purposes.

I take it you agree with what Mr. Davis has said, that this is a debatable matter? Mr. Davis is confident and apparently you are confident that a proper interpretation is that which you have given us?

Mr. MARTIN (*Essex East*): The very fact that you used the word "interpretation" suggests that there can be another view. However, applying the common sense interpretation I am of the opinion, as Mr. Davis is, and as our advisers are, that the very nature of the situation envisaged in your interrogation warrants the answer we have given in respect of the interpretation you have made.

Mr. BREWIN: Mr. Martin if that is so, and it is debatable, I must say that I came to a different conclusion from you as to the normal interpretation of those words. I may well be wrong.

Mr. MARTIN (*Essex East*): It would not be the first time that we have interpreted words differently.

Mr. BREWIN: No, it certainly would not nor do I imagine the last. Suppose this is capable of two interpretations; I should like to pursue two lines of questioning. Have you discussed this matter of your interpretation which you say you and your advisers have made in any way with the representatives of the United States to see whether their interpretation coincides with it?

Mr. MARTIN (*Essex East*): I do not propose to reveal the position in a private negotiation between ourselves and the United States officials in respect of what their position was, but I can tell you there is no doubt that they know of this interpretation and, regarding them as reasonable minded people, I have no reason to believe that they would not concur in that interpretation.

Mr. BREWIN: You state you have no reason to believe that they would not concur?

Mr. MARTIN (*Essex East*): I have no reason to believe that.

Mr. BREWIN: Is there any serious difficulty involved in ascertaining their interpretation in respect of this important matter before we proceed?

Mr. MARTIN (*Essex East*): Yes there is a very grave difficulty in that regard. You are a good lawyer and you know that when you are involved in the process of negotiations sometimes there are situations which make it something other than desirable to spell out your position because of the fear that in doing so you may create greater problems. I think that a successful

negotiator is one who obtains, by way of an agreement, an interpretation on, in this case, the main purpose, from which will flow all reasonable consequences. I say to you that the reasonable consequence is that if there is a clear right for consumptive purposes to divert, it would be nonsensical to suggest that the water that has left the Columbia for the purpose of irrigating, let us say, an area of Saskatchewan could not, after it had served the purpose of irrigation, be used for power purposes. I think any other conclusion is just wholly impractical, and to interpret that in a clause would I think have been tactless.

Mr. BREWIN: You suggest it would have been tactless?

Mr. MARTIN (*Essex East*): I say it would have been tactless.

Mr. BREWIN: Let me put this to you. There are some legal opinions which I have received to the effect that unless you insert some such word as "primary" you will have difficulties. What I am putting to you is that I have obtained legal opinions from individuals qualified in this field which indicate to me that unless you put in your actual wording some such phrase as "primary purpose", or "main purpose" such as for irrigation, for example, a perfectly reasonable interpretation would be that any diversion which contemplates hydroelectric power is excluded.

I have received that opinion, and you have received a different opinion—

Mr. MARTIN (*Essex East*): You say you have received a legal opinion; we can get a thousand legal opinions on a thousand subjects. I would prefer your legal opinion to that of whoever you solicited, but my opinion, legal and common sense, is as I have stated. I think the situation as stated in the treaty is correct. I think that to have asked for anything else would have been impractical and would have had no real foundation. I do not mind this exercise, and it is your privilege as a member of the committee; I do not mind this line of interrogation, but I suggest to you that it is really academic, as we sought to indicate to Premier Lloyd. What is important is whether or not this whole question is a practical one of diverting water for this purpose to Saskatchewan. I ask you to bear in mind what we point out in table 3 on page 52. This would be the last thing that would be done; the cost alone is prohibitive.

Mr. BREWIN: I quite appreciate you have a view, which is put down there, that the diversion to the prairie provinces is not practical. I understand that point of view, but what I am asking you to do is to deal with the following question: Suppose someone disagrees with this view, does this treaty prohibit it or does it not? We are entitled to find that out, I think.

Mr. MARTIN (*Essex East*): You said I was referring to what was my view, but I would call your attention to the terms of the preliminary study of the possibilities of additional water supplies, prepared by Crippen Wright Engineering Limited, which is part of the documentation before the committee.

Mr. BREWIN: I am fully aware of that, and that is an engineering report. I do not think there is any use in either you or I discussing engineering reports at this moment.

Mr. MARTIN (*Essex East*): I think it is very important because my answer to you includes this. I refer to chapter I of the summary of this report.

This report presents the results of a brief study of possibilities of diverting water into the Saskatchewan river basin from rivers flowing west from the Rocky mountains and those flowing northward on the eastern slope. These studies, broad and general in scope, have been based only on available maps and reports and have been completed within a very short time.

The following observations, without consideration of any planning by the province of Alberta, can be made:

- (a) Diversion of the upper North Saskatchewan river into the Red Deer and South Saskatchewan rivers suggests substantial savings in power development costs within Saskatchewan as it would take advantage of regulation provided by the South Saskatchewan dam reservoir and the additional 150 feet of fall available within the province. Diversion at Rocky Mountain House is very low in cost and appears to be an attractive first increment to supplement irrigation, domestic and power requirements.
- (b) The diversion of the Athabaska, as a first stage of an eventual Peace river diversion, is feasible and seems attractive during or following construction of power projects on the North Saskatchewan river.
- (c) Diversion of at least 20,000 cfs from the Peace river was found to be economical. Even greater quantities are available with upstream regulation.
- (d) Diversions of the Kootenay, Columbia, or Fraser river water are high in cost. Water from the Fraser costs the least of that obtainable from the western slope.

It is suggested that the diversions be developed in the sequence listed above. Transfer of diverted flows from the North Saskatchewan river into the South Saskatchewan reservoir for controlled release down the Qu'Appelle valley appears economically feasible.

This report supports the conclusions which are to be found in the table at page 52, and when the treaty negotiators discussed it with their opposite numbers—and I was not in that group because that took place before April of 1963—this situation was before them. They knew what the cost of diversion from these various bodies of water would be; they knew, in addition to that, the fact that there would be a pumping lift of 2,500 feet required in the case of the Columbia, and that this was the last possible source. That being the case, and I suggest that to you from my knowledge of my share of the negotiation, it would not have been tactful to pursue the matter any further.

Mr. BREWIN: I fully appreciate what you have just told us. I did not ask you about it and I do not propose to question you about it, Mr. Martin, because, much as I admire your expertise in some fields, I doubt whether you are an engineer. I want to concentrate on those matters on which you are an expert and that is on the use of words.

Mr. MARTIN (*Essex East*): You are now entering into the realm of abuse—

Mr. BREWIN: I thought it was a compliment—

Mr. MARTIN (*Essex East*):—which I always regarded as the last refuge of a man who has a very bad case.

Mr. BREWIN: If you consider that to be abusive, you should just wait. Let me come back to the point in which I am interested, and we will see if you can answer it. Has the government of Canada in fact ascertained the view of the American government, either before or after the signing of the treaty, on the right to divert for multiple use including hydro? Has it obtained any view?

Mr. MARTIN (*Essex East*): Will you please repeat your question?

Mr. BREWIN: Has the government of Canada ascertained the views of the United States government on the question of the right to divert for multiple use including hydro?

Mr. MARTIN (*Essex East*): I already answered your question, Mr. Brewin. I told you that the interpretation that I gave is a common sense one, that I have given it in the negotiations. That is the answer. I would point out to you

that if we had pressed beyond that for something that I do not think was at all practical or sensible, if we had pressed for further clarification to include power use specifically, I would not have been surprised if the United States would have insisted on specific limitations in the agreement that was reached with regard to the consumptive use. What you have overlooked in your interrogation is that if we had done that, we would have overlooked the main purpose of the treaty, which is to produce power in the Columbia river.

Now, it was not in the Canadian interest to encourage specific limitations, and I think that this would be the last thing that even Saskatchewan would want. The former administration obtained in its negotiations a broad definition of the right of diversion. We believe it was a good definition, and in the protocol we were able to go further and have it positively affirmed. I think that we were able in consequence to obtain what was in our respective interests. The clearly reasonable position is surely that if a diversion is genuinely for a consumptive use, it can be made. If it is not genuinely for a consumptive use, it cannot be made on the pretext that it is for such a use. That is obvious. If power is produced from the quantity of water which it is justifiable to divert for the consumptive use in this particular case, that would not affect the validity of the diversion.

That is the position. You may take the view that we should have gone on and developed the clause along the lines of your interrogation. To have done that would have been to defeat the purpose of the treaty; it would have been to ignore the rights, the legal and constitutional rights, of the owner; and it would have been completely to ignore—as at the moment you seem to be doing in your questions—the real fact, and that is that diversion from the Columbia is too costly and would be the last river from which to make the diversion.

Mr. BREWIN: Mr. Martin, I appreciate there is a difference of opinion as to the practicality of the diversion. I am only trying to find out if it is excluded or not excluded by the terms of the treaty, and I would just ask—

Mr. MARTIN (*Essex East*): I have given my answer.

Mr. BREWIN: —if I would be properly summarizing your answer to my question, which was whether the government of Canada had ascertained the views of the United States government as to multiple use, if I said the simple answer would be no?

Mr. MARTIN (*Essex East*): I did not say that.

Mr. BREWIN: I know you did not say it. Would it be correct if I said it?

Mr. MARTIN (*Essex East*): I have given you the answer.

Mr. BREWIN: What is it?

Mr. MARTIN (*Essex East*): I have told you twice, Mr. Brewin, maybe three times, what I believe the interpretation of this clause to be.

Mr. BREWIN: My question is: have you obtained the United States government's view?

Mr. MARTIN (*Essex East*): I have answered that.

Mr. BREWIN: Is it yes or no?

Mr. MARTIN (*Essex East*): I do not answer yes or no.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You never do.

Mr. MARTIN (*Essex East*): If I answered yes or no I would be limiting myself to a very irresponsible course, and I do not intend to be drawn into that irresponsibility even by so adroit a cross-examiner as you.

Mr. BREWIN: All I can say to you is that if you do not answer the question I can only assume that you have not done so.

Mr. MARTIN (*Essex East*): I have answered the question. What I think you should say is that I have not answered it to your satisfaction.

Mr. BREWIN: I say that you have not answered it, period.

Mr. MARTIN (*Essex East*): You look over the text there and you will see that I have.

Mr. BREWIN: Mr. Martin, in the presentation the same wording is mentioned at the foot of page 134, and there again there is a little note about the meaning of "consumptive use". This is in the last paragraph of page 134 of your presentation.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: I read:

In connection with the meaning of "consumptive use" it should be noted that a diversion carried out for a true consumptive use, such as irrigation, does not cease to be an "authorized diversion" merely because the water while en route produces hydroelectric power, either incidentally or even as an integral part of the diversion scheme. The essential question will be: What is the real and genuine purpose of the diversion? If it is a consumptive purpose, it is provided for.

Mr. MARTIN (*Essex East*): Precisely. That is what I said a moment ago.

Mr. BREWIN: I just ask you—and perhaps you can give me a simple answer—what is your authority, other than your own view, for this statement? I challenge the statement.

Mr. MARTIN (*Essex East*): You can challenge it. I told you that I stated the interpretation during the course of the negotiations and, having stated it, there was no contra response. Now, I have told you that four times. You are not satisfied with that answer, but I cannot make you satisfied; all I can do is give you the answer.

Mr. BREWIN: I am asking a different question. Have you or the government of Canada any written legal opinion which justifies this particular paragraph or statement? If so, I think the committee should have it.

Mr. MARTIN (*Essex East*): I have answered you. I have nothing further to say.

Mr. BREWIN: You have not answered this question, Mr. Martin.

Mr. MARTIN (*Essex East*): I have.

Mr. BREWIN: Have you a legal opinion that justifies this statement?

Mr. MARTIN (*Essex East*): Yes, we have.

Mr. BREWIN: Is it in writing?

Mr. MARTIN (*Essex East*): We have our own legal advisers as part of the negotiating team.

Since you wish to pursue this on a legalistic basis I would like to refer you to the Cayuga Indian claims case which is reported in 1926, volume 20, of the American Journal of International Law at page 587. This was decided by the British-American Claims Commission. The judgment of that commission, inter alia, when dealing with the principle that an absurd construction is to be rejected proceeds as follows, and this is as you know sometimes referred to in international law as the rule of effectiveness.

Mr. BREWIN: I will not quarrel with that.

Mr. MARTIN (*Essex East*): You will be interested in this quote from the judgment:

"We cannot agree to such interpretation. Nothing is better settled as a canon of interpretation in all systems of law than that a clause must be so interpreted as to give it a meaning rather than so as to deprive it of meaning. We are not asked to choose between possible meanings. We are asked to reject the apparent meaning and to hold that the provision has no meaning. This we cannot do"

So the rule really means that the contracting parties must obviously have had some purpose in making the treaty or in inserting a particular provision, and since it is the duty of a court to ascertain that purpose and to do its best to give effect to the true intention of the parties, it must endeavour to give some reasonable effect to each part of the whole document. If this does not satisfy you fully, I would remind you of the rule that *ut res magis valeat quam pereat*.

Mr. BREWIN: Well, Mr. Martin, I have no quarrel with that little excerpt of learning, although I do not think it has any application to the problem here.

Mr. MARTIN (*Essex East*): This is basic. I am surprised that such a good lawyer as you does not see the application of it.

Mr. BREWIN: Let me make one more endeavour and then I will give up. Have you any written legal opinions?

Mr. MARTIN (*Essex East*): No; that is not required. This is so obvious, it seems to me, it does not require that kind of thing. You may want at some point to question Mr. Olson, for instance, of the Department of Justice on this.

Mr. BREWIN: I certainly would like to do so.

Mr. MARTIN (*Essex East*): I think you will find that he would take the same view as I have taken about this matter. There is no reason why you should not.

Mr. MACDONALD: In connection with this matter, Mr. Brewin has been discussing it in abstract terms. However, you made reference to an engineering report on concrete proposed diversions.

Mr. MARTIN (*Essex East*): Yes, the Crippen report, Mr. Macdonald.

Mr. MACDONALD: Did that report indicate the most practical diversions in the Kootenay and Columbia rivers?

Mr. MARTIN (*Essex East*): That is at page 52 of the presentation paper, to which I refer you, Mr. Macdonald, where, in Table 3, the various diversion schemes are referred to together with the acre-feet annual cost. That shows the cost of diverting from the Columbia as being the highest, as compared with the diversion from the North Saskatchewan, the lowest—\$0.40 as compared with \$10.50.

I hope there will be an opportunity, Mr. Macdonald, for you and your colleagues in the committee to examine this report further. In fact, this might be a good time, if you wish to pursue this matter, for me to ask Mr. Gordon MacNabb, the northern affairs engineer, to give us the full technical story on this. He can do so with the use of charts which I think will be very demonstrative and very helpful to my friend Mr. Brewin. I want to finish this question first.

The CHAIRMAN: After Mr. Macdonald, I have Mr. Leboe, Mr. Davis, and Mr. Herridge. If members would be kind enough not to expand beyond the topic that they are using, there would be more orderly sequence and some chance for everybody to be heard at a proper time.

Mr. HERRIDGE: That is my point. Before they get on to the technical aspects, I want to ask Mr. Martin a question relevant to the question raised by Mr. Brewin.

The CHAIRMAN: May we come back to that? You will be next after Mr. Davis, who follows Mr. Leboe.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, are you in agreement with the policy of trying to keep the questioning at any period within a certain context? Mr. Macdonald has already moved out of context?

Mr. MARTIN (*Essex East*): No, this is all on diversion.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes, but on the technical aspects of it which neither you nor Mr. Macdonald are competent to discuss.

Mr. MARTIN (*Essex East*): In fairness to Mr. MacNabb, he is an engineer very competent to discuss these things, and he is one of the outstanding public servants in our country.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Will you state clearly now if you are going to follow the rule you stated a few moments ago and request committee members to follow the same line of questioning that has been established until it is exhausted?

The CHAIRMAN: I think I said that after a member had finished his questions, we would ask the member not to proceed in the course of his investigation to include new topics, because we have 35 members of the committee, many of whom wish to ask questions. Now if Mr. Herridge or anyone else wishes to get back to the legal question raised by Mr. Brewin, he will do so, I hope, in a fair and logical sequence. We do not want to deprive members of the committee of the chance to ask these experts about matters which they regard as significant or relevant.

Mr. LEOBE: I believe it would be better possibly if some questions were to be asked now rather than to go into the technical aspects. This is in the mind of the committee, I believe, as well as in my own mind. I think my remarks would be more appropriately placed on the record now rather than after we have had a technical discussion of the matter. Am I not right?

Mr. MACDONALD: My purpose in raising the point was that we can apply the interpretation of this particular definition to actual facts rather than to imaginary facts. Let us discuss the actual facts of the situation and apply ourselves to them. I think that would be better than to address ourselves to an imaginary interpretation.

Mr. BREWIN: We will supplement your imagination with plenty of facts.

Mr. MACDONALD: We will have to use a lot of imagination.

Mr. HERRIDGE: Would the witness mind giving us his academic qualifications and experience in planning and regulating hydro systems?

The CHAIRMAN: I wonder if we might leave this questioning to Mr. Macdonald at the moment. You might prefer to challenge this at a later stage.

Mr. HERRIDGE: It is not a challenge.

The CHAIRMAN: Perhaps Mr. Macdonald would care to ask the witness these questions.

Mr. MACDONALD: Perhaps I should refer to the qualifications of Mr. MacNabb.

Mr. MARTIN (*Essex East*): Mr. MacNabb is a government servant, serving the government of Canada. As a minister of the government I want to say that if there is any question about Mr. MacNabb's competence, I hope that someone will state it, because I assure you that Mr. MacNabb has worked on this matter for a great number of years, and that he is a brilliant engineer who has made a notable contribution, and who is recognized I am sure by engineers in the government as well as in private service as being outstanding in his field. I would not want even this question—in fact I could not, as a member of the government, let it go by—if there was any suggestion of criticism of this witness. I want it to be known that there is no warranty for any suggestion that could be implied in the question that was asked.

Mr. HERRIDGE: I want to explain that it is going to be our custom to ask each technical witness to state his academic qualifications and experience for the record, and in terms of his experience and so on. I think it should be placed on the record accurately.

Mr. MACDONALD: Perhaps we might find out through yourself the technical qualifications of Mr. MacNabb who is, beyond question, an expert on this particular subject.

Mr. MARTIN (*Essex East*): I have no objection to Mr. MacNabb's telling us where he graduated. But I want to make it clear that I do not think it is fair for a government servant to have it suggested that he is not competent. There was an implication in this question that has been made before that I do not think is fair in the case of the government service. This was the attitude taken on one occasion by Mr. Fulton in respect of this very matter, and I am taking the same attitude as a minister of the crown. In fact, it is my duty to do so. However this does not preclude Mr. MacNabb from telling us of what university he is a graduate, and that sort of thing.

The CHAIRMAN: What is inherent in all the comments, first those of Mr. Herridge and those of Mr. Fairweather, is that general advice be given as we proceed in the committee in the way of receiving something of the nature of the background and the qualifications—maybe not in any technical and legal sense as one would receive them from an expert witness, but in whatever way the questioner seeks it. May I ask you to use your judgment in respect of Mr. MacNabb and perhaps permit him to familiarize the committee in a general way with his own qualifications and background on this subject.

Mr. MACDONALD: Perhaps we might ask Mr. Martin to do that, or Mr. MacNabb.

Mr. MARTIN (*Essex East*): I wanted to clear up any implications in Mr. Herridge's remarks that have been made before, which I do not think should be allowed to pass.

Mr. HERRIDGE: I resent that statement. I have said that I intend to ask each witness his qualifications, including those in favour of it.

Mr. DAVIS: Do you wish us to direct questions to the principal witness, or subsequently to the advisers?

Mr. MARTIN (*Essex East*): No. Mr. Macdonald may ask this witness his background. There is no difficulty about doing that. I want it to be clear.

Mr. MACDONALD: Mr. MacNabb, would you refer briefly to your technical background, and especially with regard to this particular project?

Mr. G. M. MACNABB (*Water Resources Branch, Department of Northern Affairs and National Resources*): I do so gladly. It has already been done in *Hansard*. I am a graduate of Queen's University, at Kingston, Ontario, in 1954, in civil engineering. Ten years since then I have worked continuously for the water resources branch, primarily on Columbia river matters, as well as on the Saint John river, the Ottawa river, and the St. Lawrence river. I am a registered professional engineer in the province of Ontario.

Mr. MACDONALD: Have you considered particularly the question of the diversion of Columbia river waters over the great divide into the Saskatchewan river basin?

Mr. MACNABB: Yes. I have looked at it as far as I can, in the report of the Crippen Wright Engineering Limited. Before I comment on their evidence, I think it is fair that I should read the following paragraph into the record. This is from chapter II of the Crippen Wright report. It reads as follows:

It has been necessary to complete this report within a very limited time, and only such maps and reports as were readily available have been used to determine possible schemes. Costs have been based on paper locations with little knowledge of actual terrain or soil conditions. Maps with a scale of 1½ inches to one mile have been used for most of the studies of diversions on the eastern slope of the Rockies within

Alberta. For the trans-Rocky diversion schemes the largest scale maps available are one inch to eight miles except for limited areas of the Columbia and Athabaska river valleys.

The CHAIRMAN: Mr. Herridge indicates he is not hearing.

Mr. HERRIDGE: Would you speak a little louder, please?

Mr. MACNABB: The study by Crippen Wright Engineering Limited, as Mr. Martin has mentioned, examined possible diversion schemes both from the eastern slopes of the Rocky mountains and from the western slopes, taking the water up and through the Rocky mountains. The company found that the cheapest scheme was a diversion within the Saskatchewan basin itself to take water from the North Saskatchewan down into the Red Deer river and into the South Saskatchewan. With that they could get 2,600 average cubic feet per second, or 1,900,000 acre feet at an annual cost of 40 cents per acre foot.

The next step in the diversion plan which they proposed was to take water from the Athabaska river in Alberta into the North Saskatchewan river, to follow the North Saskatchewan down and then be diverted into the South Saskatchewan river, ending in the reservoir of the South Saskatchewan dam. That diversion would involve 4,500,000 acre feet at a cost of \$1.60 per acre foot to get it into the North Saskatchewan, and a further cost of \$1.90 to get it into the South Saskatchewan. The width of these arrows are in proportion to the amount of water involved in the diversion.

The next step is a very large diversion of the Peace river to take it into the Athabaska, then into the North Saskatchewan, and finally into the reservoir of the South Saskatchewan dam. That diversion, involving a very large amount of water, 19 million acre feet a year, could be accomplished at \$2.70 per acre foot annually to get it into the North Saskatchewan, and a further \$1.90 to get it into the South Saskatchewan. This would provide a very large amount of water for the South Saskatchewan system. Only then did they indicate a diversion taking water from the western slopes would be feasible; that was from the northern portion of the Fraser river. Its cost would be about \$5.40 into the North Saskatchewan system. Diversion from the Kootenay river system, without considering any loss of power in British Columbia or in the United States, would cost about \$7.60 per 5-acre feet per year.

Now, a diversion which has been given a considerable amount of attention recently, and which is mentioned at page 52 of the presentation paper, is the Surprise rapids reservoir on the Columbia river which is a dam which was studied by the water resources branch during its studies over the last 20 years. This dam now would be flooded out by the Mica reservoir, so it does not fit into the plan of development presently envisaged. The reservoir would be up near the big bend of the Columbia river with an elevation of about 2,550 feet. You would pump water from that reservoir 2,500 feet up the western slope of the mountains and divert it through a tunnel to the eastern slope. The tunnel would reach an elevation of about 5,000 feet above sea level, so there would be a pumping lift of about 2,500 feet. The efficiencies of the pumps on the western slope and the generators on the eastern slope, plus losses in pumping through tunnels would add about 50 per cent to that. You would be pumping up an equivalent of 3,750 feet.

The loss of water over the heads of the Mica creek, Downie creek, Revelstoke canyon, and Murphy creek reservoirs would add another 1,000 feet. All together the head which you would lose on the western slope is about 5,000 feet. You would have to develop every foot of head from the outlet of the tunnel at elevation 5,000 feet right down this system of rivers into Hudson bay, just to recover the pumping power and power losses on the western slope. To divert water for power, in my view, just is not a practical consideration. The

diversion would have to be based solely on a consumptive need. This problem has been looked at in considerable detail by the Montreal Engineering Company, and you will have witnesses from that company later to give you more detail.

Mr. MACDONALD: Do I understand that when you put together the high cost of pumping it up over the great divide, and the opportunities of recovering it on the eastern slope, there would be a net loss of power involved in that particular project.

Mr. MACNABB: Unless you can develop every foot of head from the outlet of the tunnel on the eastern slope to the water level of Hudson bay; you have to get the water up over the Rocky mountains, the western water to the east.

Mr. MACDONALD: So this becomes not a scheme for purposes of power, but for the consumption of hydroelectric power.

Mr. MACNABB: Yes, for the consumption of hydroelectric power to get the water over there. The plan necessarily must be for the consumption of water on the eastern slopes, and not for the production of hydroelectric power.

Mr. LEBOE: Mr. Chairman, I have one or two comments to make in connection with this. The attitude seems to be, here in the committee, that something new has been brought up. On page 162 in the comments as reported, the words read:

Doubt was also expressed whether Article XIII(1) of the treaty, in a positive enough way, gave Canada the right to make diversions of Columbia waters for consumptive uses such as irrigation, domestic and municipal needs.

Argument will be presented on this point, but this item really affirms Canada's right to make its diversions. My point is that Canada having the right to make the diversion, there can be no question, in my mind, about making the diversion; the question can come, if at all, after the diversion has been made in regard to whether or not the water actually was used for consumptive purposes. To say that the water cannot go through a generator on its way to be used, the argument must be made, I think, on whether the water, in fact, wherever it is taken from, is used for consumptive purposes. This would be a point that the other contracting party would have to prove. This is the point I would like to make now.

Mr. MARTIN (*Essex East*): If you are addressing that to me, I think it is an excellent statement; it is what I tried to say in replying to Mr. Brewin.

Mr. DAVIS: Mr. Chairman, I would like to address a question or two to Mr. MacNabb with regard to this matter of beneficial use. I think Mr. MacNabb has explained to us that the amount of power that would have to be put in to raise the water of the upper Kootenay or the upper Columbia over the Rocky mountains is in excess of the amount which theoretically could be recovered by dropping it all the way to the sea and Hudson bay. Surely the principal use to which the water would be put—consumptive—would be in respect of irrigation in southern Alberta, and perhaps the southwestern corner of Saskatchewan. What is the elevation of the water in the upper Kootenay and the upper Columbia?

Mr. MACNABB: About 2,500 feet.

Mr. DAVIS: What generally is the elevation of the irrigable lands in southern Alberta?

Mr. MACNABB: The border of Alberta and Saskatchewan, I believe, is about 2,600 or 2,500 feet.

Mr. DAVIS: So, under any circumstance you would have to put energy into that point to get it up to irrigate in those high areas of southern Alberta and Saskatchewan.

Mr. MACNABB: That is definitely so.

Mr. DAVIS: So, you could not recover on the balance; you would be putting energy in.

Mr. MACNABB: Yes; unless you developed every foot of head and used all the water all the way to Hudson bay you would not get a gain, even then you would not.

Mr. DAVIS: And, if you used some of this water or the majority of it for irrigation a good deal of it would be lost in the process.

Mr. MACNABB: Yes, a fair percentage would be lost and, of course, some returned to the river.

Mr. DAVIS: So, you could not conceivably get anything like as much power back.

Mr. MACNABB: Not if you were to use the water for irrigation or consumptive use.

Mr. DAVIS: In other words, a diversion for consumptive use, such as irrigation on the prairies, would not produce power.

Mr. MACNABB: No.

Mr. DAVIS: Then power would not be a beneficial product in respect of such diversion.

Mr. MACNABB: No.

Mr. DAVIS: Then it can be argued that power is not a beneficial use or not a use in the generalized sense of this diversion.

Mr. MACNABB: You must make up your mind on the use to which you want to put the water, consumptive use or the production of power; you cannot have both at the same time.

I should point out that the amount of power needed to make this diversion from the Surprise reservoir is 13.3 billion kilowatt hours per year. So, comparing this to the total output of the Columbia system in British Columbia when fully developed, 20 billion, you are using 13 billion to lift it up the slopes. Allowing for the loss of water diverted from the Columbia from Mica down to Revelstoke and Murphy creek you lose between three billion or four billion kilowatt hours and arrive close to 17 billion kilowatt hours for pumping power and losses, which is very close to the full output of the Columbia river system. The question you have to ask yourselves is: where are you going to get this power? You would have to develop the Columbia and use all this power to drive these pumps, and that is the only answer. It would not be practical to take power you are going to generate on the eastern coast and then build the transmission lines. You would have to obtain that power from British Columbia resources.

Mr. DAVIS: Are you saying that if cost was no object you would not make this diversion because you would not produce any power?

Mr. MACNABB: You would have no gain in the way of power.

Mr. DAVIS: Considering dropping it all the way to the sea.

Mr. MACNABB: Yes.

Mr. DAVIS: And, if there is some depreciation or deficit in power it is that much less.

Mr. MACNABB: Yes.

Mr. HERRIDGE: Mr. Chairman, I wanted to ask Mr. Martin one question because I thought he made a rather interesting statement in respect of this.

Mr. Martin, you said that in your opinion, under the terms of the treaty there would be the right to produce electric power after the water had been used for irrigation.

Mr. MARTIN (*Essex East*): I said after but I could have said before; it depends what is primary use.

Mr. HERRIDGE: Are you not aware that after water has been used for irrigation there is no power left?

Mr. RYAN: Not always.

Mr. MARTIN (*Essex East*): There is some drainage back. What we were talking about was the use of the water in conjunction with the other. If there is any doubt in your mind I will state the situation again.

We think that the definition of consumptive use and the provisions in connection therewith in article XIII (1) and the protocol are in the best form from the Canadian point of view. That is what I sought to emphasize to Mr. Brewin. We do not believe it is desirable and we do not want to press for any specific change to include any reference to multiple use. We have made it clear that we understand this to be the intent of the provision in the treaty, and this has not been challenged, Mr. Brewin. That is where the legal principle I quoted from a few moments ago comes in, and it is this: this statement is backed up by this jurisprudence. The parties had a reason for making the clause as it is, and from the Canadian position our purpose and intent are clear.

Now, I suggest to you that if we were to press for further clarification other than the clarification we have in the protocol and to include power use specifically the United States, undoubtedly, would want to insert specific limitations; they cannot possibly do otherwise because the purpose of the whole treaty is to produce power in the Columbia basin.

We do not want specific limitations in Canada, and I think, that is the last thing the province of Saskatchewan would want. We have a broad definition, which the former administration was able to obtain, and we believe, with the way in which that definition has been restated in the protocol, we should stick with it because it is in our interest.

It was the judgment of the previous government that the broad definition is best and the government of which I am a member has come to the same conclusion.

I think it was wise to clarify what we have sought to do because there is, undoubtedly, in paragraph 6 (1) of the protocol a clear and positive right to divert, and I do not think it is in our interest to be more specific than that.

While I am on this subject I would like to complete my view in respect of this. In my correspondence with Premier Lloyd I refer particularly to my letter of October 3, and I am reading from the last paragraph on the first page of that letter, which reads as follows:

The combined population of Alberta and Saskatchewan over the last 30 years has increased at approximately one per cent per annum. While this growth rate has increased to $2\frac{1}{2}$ per cent during the period 1951 to 1961 it would have to average roughly $3\frac{1}{2}$ per cent over the next 100 years or 6 per cent over the next 60 years to fully utilize the water supplies available from the Saskatchewan, Athabaska and Peace rivers. I would suggest, therefore, that even though there is nothing in the Columbia river treaty to prevent consumptive diversions to the prairie provinces during or after the period of the treaty, it is extremely unlikely that these diversions will be required for a considerable number of years after the termination of the treaty.

The reason I have directed your attention to that paragraph is that Mr. Lloyd commented on every point I made in my letters to him but he completely ignored this. He may have had good reasons for doing so but, I suggest to you, this is a very important statement which has to be examined in respect of this whole situation, and it could be supported by what Mr. MacNabb had to say in

respect of cost and by what is set out in the presentation paper on this whole subject at page 52.

Mr. FLEMING (*Okanagan-Revelstoke*): Mr. Martin, when the correspondence was taking place with the premier of Saskatchewan did you or your government's negotiators discuss this matter with the British Columbia negotiators—that is, with ministerial representatives of the province of British Columbia—to see what their viewpoint was? The reason I put this question is, as you know, the south central valleys of British Columbia are dry and dependent upon irrigation. The province of British Columbia indicated that if any such diversion took place this diversion would be diverted to those arid areas of British Columbia which are dependent upon irrigation at the present time.

Mr. MARTIN (*Essex East*): I do not remember any specific discussion with them in respect of the dry areas in British Columbia, and while I did not discuss my correspondence as such with the ministers from British Columbia who were here, this subject generally was discussed with them when we came to consider the kind of modification in respect of diversion as set out in the protocol. However, the ministers from British Columbia will be here next week and they can be questioned further in this respect.

Mr. FLEMING (*Okanagan-Revelstoke*): There was just one further point. In using the term "consumptive use" for the waters I wondered whether this was at the request of British Columbia in view of the fact there may be a consumptive use in respect of the dry lands within British Columbia itself, which would require a great proportion of this water.

Mr. MARTIN (*Essex East*): No. Of course I was not a party to the negotiation of the treaty of 1961. I was only a party to what happened afterwards. What we had in mind, and what I am sure the former government had in mind, was broad consumptive use in so far as this was applicable to other provinces as well as the province of British Columbia.

Mr. FLEMING (*Okanagan-Revelstoke*): Thank you.

Mr. GROOS: Mr. Chairman, I just want to find out whether I understood the expert witness correctly. Did he say that if this diversion was made of the expert witness correctly. Did he say that if this diversion of the Columbia river waters was made for consumptive use on the prairies this would take almost the entire output of the electric power that is now generated on the Columbia and which belongs to British Columbia and at the same time British Columbia would lose a great deal of the water which now belongs to it?

Mr. MACNABB: Yes.

Mr. GROOS: There would be no way of recovering this power except by regenerating part of it on the prairies; is that right?

Mr. MACNABB: That is correct. The engineering report states that the energy needed to pump water up the western slope would be 13.3 billion kilowatt hours annually, and that was in respect of a diversion of about 6,000 cubic feet per second. That would take 6,000 cubic feet per second away from the dams at Mica and Revelstoke. In respect of Mica that represents one third of the water, so British Columbia would lose between 3 and 4 billion kilowatt hours in British Columbia. So you add the amount of power needed to pump to the lost power to British Columbia and you get an answer of about 17 billion kilowatt hours. You can compare that figure to the total potential output of the Columbia basin in Canada which is about 20 billion and you will see that it would take about the full potential development on the Columbia river to get this water over the divide into the prairies, and that power would have to come from British Columbia resources. You could not hope to take the power that is recovered on the eastern slopes all the way from the continental divide to Hudson bay and try to transmit that back to the pumps across the Rocky

mountains. This power would have to come from some source along the western slope.

Mr. GROOS: The cost of \$10.50 per acre foot as shown in table 3 at page 52 does not include the cost of the water itself?

Mr. MACNABB: That figure does not include, as indicated in footnote 2, any allowance for the return of power generation which could potentially be developed in the Columbia basin of Canada.

Mr. GROOS: So British Columbia would lose the power and the water?

Mr. MACNABB: Yes.

Mr. LEBOE: Mr. Chairman, I should like to ask a question for clarification. In view of the fact that Saskatchewan has been mentioned many times I should like to refer to the letter we have from the premier's office, dated January 27, 1964. It is stated in this letter—and this refers to the diversion:

It does this because, according to your wire, any use of such diverted water for power production other than in an 'incidental' way would be a breach of the treaty. Indeed, you suggest that you cannot be sure in advance that any particular diversion would not be challenged.

Of course this is an interpretation that may or may not be accurate. The letter then states in the last paragraph:

It is obvious that power production would have to be an integral rather than an 'incidental' part of any river diversion of this magnitude.

The problem I see here in connection with this letter—and this seems to have a bearing on this whole situation—is that the South Saskatchewan dam, which is a large dam, is for irrigation purposes primarily and not for power purposes. It was developed I believe under the Praire Farm Rehabilitation Act, and projects developed under this act are paid for by the federal government to the extent of 75 per cent. It seems to me that the premier is defeating his own argument because he is asking for a dam to be built for irrigation purposes and now he is trying to suggest that at least to a great extent the dam was built for power purposes. I feel he is working at cross purposes and that this is something which should be brought to the attention of the committee.

Mr. MARTIN (*Essex East*): Mr. Leboe I agree with you remarks and thank you for them. I simply want to make a comment, since you have called my attention to premier Lloyd's comment in his letter of January 27, on what he attributes to me, and I quote his statement:

Indeed, you suggest that you cannot be sure in advance that any particular diversion would not be challenged.

I suggest that is a distortion of what was said to him. There was a complete reply to that suggestion included in paragraph 3 of my letter of January 30, 1964.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, I should like to ask Mr. MacNab several questions. Mr. MacNabb, you gave us some rather elaborate figures in respect of costs for alternative diversion schemes. I am interested in knowing the nature and the extent of the field studies upon which you have based your estimates.

Mr. MACNABB: As I said at the beginning of my testimony, sir, these estimates are not mine. These are estimates by Crippen Wright Engineering Ltd. as contained in their report to the Saskatchewan Power Corporation of March, 1962. The extent of the field investigations are very preliminary and that is why I read the paragraph out of chapter 2 at the beginning of my testimony. Perhaps I could read it again. It states as follows:

Costs have been based on paper locations with little knowledge of actual terrain or soil conditions. Maps with a scale of one and one quarter

inch to one mile have been used for most of the studies of diversions on the eastern slope of the Rockies within Alberta. For the Trans-Rocky diversion schemes the largest scale maps available are one inch to eight miles except for limited areas of the Columbia and Athabaska river valleys.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. MacNabb, as an engineer would you consider it professionally wise to present figures on such very preliminary studies?

Mr. MACNABB: If one is asked for preliminary figures I am afraid one must give them on that basis.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): They would be of very little value in that event.

Mr. MACNABB: If the assumptions are common to all planned studies I think they do give a degree of economic feasibility as between various plans.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Just how close a tolerance would you expect?

Mr. MACNABB: All I can say is that Crippen Wright assumed a contingency factor of about 15 per cent. Personally I would like to see one higher than that for all schemes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): With regard to the observations you have made in connection with the diversion from the Columbia system, have there been more extensive studies pursued?

Mr. MACNABB: Do you refer to a diversion to the eastern slope?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes.

Mr. MACNABB: My understanding is that the only studies done since the production of this report by Crippen Wright have been done by the Saskatchewan Power Corporation itself.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Do those studies substantiate what you have told us this morning?

Mr. MACNABB: As far as I am aware they do substantiate this, sir. I have not seen anything that would indicate that the diversions from the Peace or the Athabaska would be more expensive than a diversion from the western slopes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): How then can the Saskatchewan government take the stand it has taken if it is the only one that has made a study?

Mr. MACNABB: I do not know whether it has come right out and said that this diversion from the western slope is the cheapest. While I think the government still says that it would like to see a diversion from the western slopes, I have not seen anything at all to suggest that these are the cheapest diversions.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Can you think of any reason which causes them to select one or another, except the economic factor?

Mr. MACNABB: Speaking as an engineer, no sir.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Precisely.

Mr. STEWART: Mr. Chairman, I would like to ask the Secretary of State for External Affairs if in the correspondence with the premier of Saskatchewan there was any indication that that premier had discussions or correspondence with British Columbia?

Mr. MARTIN (*Essex East*): I am not aware of it.

Mr. STEWART: That would suggest that British Columbia was prepared to acquiesce in these eastern diversions?

Mr. MARTIN (*Essex East*): I do not know that the premier of British Columbia wondered why there was no correspondence with him as the head of the government of the province with the resource. You might want to see Mr. Dinsdale's letter dated June 28, 1962 where he says:

Can you tell me whether you have raised with the other provinces concerned the possibility of water diversions and, if so, what their views are? In addition, it would be much appreciated if you would let me have a copy of your consultants' report on this subject.

And then on July 24 Mr. Lloyd replied, *inter alia*:

We have not raised this matter with any of the other provinces concerned.

I have heard of no change, unless Mr. Dinsdale himself can recall any. I know there was no indication on the part of British Columbia that there was such correspondence.

Mr. NIELSEN: I have one question which I would like to direct to Mr. MacNabb at this point. Was there any contemplation in the Crippen report of the diversion of any of the waters to the Mackenzie basin in connection with the Peace diversion scheme?

Mr. MACNABB: The Peace is a tributary of the Mackenzie basin, so certainly this diversion scheme would take, on an average, 26,000 cubic feet per second out of the Mackenzie system.

Mr. NIELSEN: The Mackenzie river system?

Mr. MACNABB: Yes.

Mr. HERRIDGE: I would just like to ask Mr. Martin a question concerning the letter handed by him to the clerk of the privy council.

The CHAIRMAN: Could we place you following Mr. Deachman and Mr. Turner?

Mr. MARTIN (*Essex East*): I see Mr. Herridge is very anxious.

Mr. TURNER: May I ask Mr. MacNabb a question? It concerns the Crippen report and your opening statement that there were certain limitations to it in the sense that these field studies were limited.

Mr. MACNABB: I do not believe there were any field studies; they were all done on paper locations.

Mr. TURNER: Do I understand that the results that flow from that report have to do with elevation more than with the particular terrain?

Mr. MACNABB: They would have to use the available maps they had of the terrain to estimate the length of the diversion tunnels to get this water through from British Columbia. For example, the maps they were using I believe were one inch to every eight miles, something in that range, so if you are out a quarter of an inch you are out two miles in the estimate of your diversion tunnel.

Mr. TURNER: In terms of power loss the elevation you have in mind is primary?

Mr. MACNABB: Yes.

Mr. TURNER: So therefore a paper study of elevation would be fairly accurate?

Mr. MACNABB: In terms of power you would have to go on the ground, I would say, to study the feasibility of the sites, particularly on the eastern slopes. The Montreal Engineering Company will be commenting on this; they are quite familiar with the sites on the eastern slopes of the Rockies and they will be able to give you more details as to their opinion of the validity of the assumption.

Mr. TURNER: In so far as the elevations are concerned in the power loss, relating to the Crippen report, I take it your study would have a bearing in view of the elevations alone?

Mr. MACNABB: Definitely, yes.

Mr. DEACHMAN: Mr. Chairman, if the questions concern the diversion, I should like to wait until a later time to ask my question.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I have one small question following on Mr. Stewart's question which perhaps should be cleared up now. Can Mr. Martin tell us if there has been any suggestion on the part of the province of Saskatchewan or on the part of anyone else that this diversion is contemplated within the next 25 or 30 years?

Mr. MARTIN (*Essex East*): I do not know; I have had no such suggestion.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would you not, on the contrary, agree that the whole implication has been that this is a concern for the future, and to protect a right for the future?

Mr. MARTIN (*Essex East*): That would be one of the reasons why we would want to make sure we have the right for consumptive use.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): So the matter of correspondence between the present premier of Saskatchewan and the premier of British Columbia is really irrelevant?

Mr. MARTIN (*Essex East*): I do know. Mr. Fleming had asked me, what I think is a proper question about the situation in his own province, and since this river, in so far as the Canadian section is concerned, is all in British Columbia I should have thought that it would have been useful for the premier of Saskatchewan to correspond not only with Mr. Dinsdale and myself but also with the head of the government of British Columbia. I do not think it is really irrelevant.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would you suggest that the premier of Saskatchewan should write to the premier of British Columbia and ask for the opinion of the premier of British Columbia on the matter in 30 years' time?

Mr. MARTIN (*Essex East*): That is exactly what Mr. Lloyd was asking me, the opinion of the successive Canadian government in the year 2,000. I thought this was a proper question, but it would also have been desirable to ask—but that is Mr. Lloyd's business—if he does not wish to communicate with the province of British Columbia. I do not understand why he did not, but that is his business.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I think it is important that we should establish the fact that the only concern at present is the preservation of a right for future exercise.

Mr. MARTIN (*Essex East*): That is why I pointed out to Mr. Lloyd—as I mentioned a moment ago in answering Mr. Herridge—on October 3:

While this growth rate has increased to $2\frac{1}{2}$ per cent during the period 1951 to 1961 it would have to average roughly $3\frac{1}{2}$ per cent over the next 100 years or 6 per cent over the next 60 years to fully utilize the water supplies available from the Saskatchewan, Athabaska and Peace rivers.

Mr. Cameron, I am not quarrelling with the premier of Saskatchewan who was, I think, properly concerned with the question of consumptive use and irrigation needs in regard to this treaty; I am not at all critical of that, but what I am pointing out is that the reason for his concern was the reason that has prompted two Canadian governments to see to it that there was the right of diversion from the Columbia for consumptive purposes. Both the former

and the present Canadian governments and the government of British Columbia, as well as the other party to the treaty, the United States, were all agreed that this was a legitimate concern.

If you look at the correspondence with Premier Lloyd you will notice that this was his main concern in the early part of the correspondence; in his letter to Mr. Dinsdale that is what he was concerned about, as well as in his preliminary correspondence with me. The other factor of power was introduced after we had clearly established beyond a doubt that there was this right for consumptive use.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am not concerned with whether you are quarrelling with Mr. Lloyd or not.

Mr. MARTIN (*Essex East*): I am not quarrelling with him.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am sure Mr. Lloyd can defend himself. I am not interested in whether you are quarrelling with him but what I am interested in is to establish the fact that it is not a contemplation of an immediate project that we have in mind, but the establishment of a right. This continual red herring business is, I think, confusing the issue.

Mr. MARTIN (*Essex East*): I do not think so. You see, you speak of a right; and I agree with you, as a right.

I call your attention to the actual wording of the protocol on this point.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): The actual wording, not your interpretation, which is what we have had so far.

Mr. MARTIN (*Essex East*): I know that you would prefer the actual wording and not my interpretation; that is clear.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes, absolutely.

Mr. MARTIN (*Essex East*): That is why I now bring you to the wording:

Canada and the United States of America are in agreement that Article xiii (1) of The Treaty provides to each of them a right—which you have just emphasized—to divert water for a consumptive use.

So there really is no issue here between Premier Lloyd and me on this point; and I take it from what you have just now said that there is no issue between you and me.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): That is what we have been trying to find out all morning without success. What we would like to know is: have you any authority for asserting that "consumptive use" includes a substantial scheme, or as you say yourself, a scheme in which an integral part is the development of hydroelectric power? We have never been able to get an answer from you on that in two hours.

Mr. MARTIN (*Essex East*): You say you have not been able to get an answer. I am going now to try again.

Our definition of "consumptive use" and the provision in the Treaty and the protocol are, from the Canadian point of view, in our judgment in the best possible form. We would not want to add or detract in any way from the wording on which we were able to secure agreement with United States.

If there is any doubt about that let me repeat that we do not want to press for any specific change to include any reference multiple use. We have made it clear that we understand this to be the intent of the treaty provision. This has not been challenged by anybody, and we are not inclined, therefore, to raise something that has not been challenged by the other party to the treaty. We had a purpose in making the clause, and the purpose and the intent of that clause is clear. We have the right of consumptive use, and "consumptive use" is defined in the treaty for the purposes that we have mentioned.

I have stated to Mr. Herridge that if we pressed for further clarification to include "power use" specifically, the United States would in turn undoubtedly have to insist on specific limitations. This we did not want. This the former administration did not want. So we have a broad definition; we think it is a good definition; we believe we should stick to it.

Mr. KINDT: Mr. Chairman, may I ask a question on that same point? Is "consumptive use" synonymous with "multiple purpose use"?

Mr. MARTIN (*Essex East*): No, Dr. Kindt. In the interpretation clause, "consumptive use" is defined as:

—use of water for domestic, municipal, stock-water, irrigation, mining or industrial purposes but does not include use for the generation of hydroelectric power.

Mr. KINDT: Suppose it flows down south to the Saskatchewan river and goes through the dam?

Mr. MARTIN (*Essex East*): I have already indicated that would be satisfactory according to our interpretation.

Mr. HERRIDGE: Mr. Cameron asked my question with respect to these being long-term views taken by the province of Saskatchewan, but I would like to ask Mr. Martin, in view of his comment in regard to Premier Lloyd and in view of the fact that the premier of British Columbia told Premier Lloyd to keep his cotton picking fingers off British Columbia, do you not think he is justified in delaying?

Mr. MARTIN (*Essex East*): I do not believe in getting into quarrels that are not in my own family.

Mr. NIELSEN: Mr. MacNabb, if the diversion from the Peace were to come about, in your view would this affect the development of future hydroelectric potential on site along the Mackenzie river?

Mr. MACNABB: Certainly if you take 26,000 c.f.s. away from the river it must affect the power potential of the Mackenzie system. This will not detract, however, from the present project under construction by British Columbia on the Peace river because diversion takes place downstream.

The CHAIRMAN: Mr. Willoughby?

Mr. WILLOUGHBY: I would like to ask Mr. MacNabb a question.

We have been hearing about the possible diversion of the water on the prairies. I would like, as a resident of British Columbia, to ask what would be the comparative cost of diversion of the upper Columbia basin that would be created to divert the water from there into the Shuswap and north Thompson valleys and Okanagan valley? Would it be feasible economically?

Mr. MACNABB: I am sorry, I cannot answer that, sir. It certainly would be more economic than taking the water over the Rocky mountains.

Mr. WILLOUGHBY: You have no idea of the relative elevations that would be involved?

The CHAIRMAN: I am sorry, Dr. Willoughby, that I called you Mr. Willoughby instead of Dr. Willoughby.

Mr. WILLOUGHBY: That is all right.

The CHAIRMAN: I may point out at this time that it has been impressed upon me we have so many PhD.'s that I have to call everyone "Mr." from now on.

Mr. DINSDALE: On the question of diversion, Mr. Chairman, it seems to me that the viewpoints expressed by the premier of Saskatchewan could have been best dealt with by the prairie water conservation board.

When I had some responsibility in these matters I always anticipated that the premier would request such a reference to the board. Has there been any such request for a reference of this kind in recent months?

Mr. MARTIN (*Essex East*): Mr. Robertson says he does not know of any. We could find out specifically, but I know of none.

Mr. RYAN: Mr. Chairman, I would like to ask Mr. MacNabb what limitations there are on lifting water by siphoning, particularly in these circumstances.

Mr. MACNABB: By siphoning? I would say it certainly would not be practicable. Siphoning is normally used to take water underneath a river, not over a mountain.

Mr. DAVIS: Siphoning also works the wrong way because you are going from low to high.

Mr. RYAN: Unless you took it from British Columbia to Saskatchewan, which would be a tremendous leap.

Mr. MACNABB: That would be a very long way.

Mr. BREWIN: I would like to ask Mr. MacNabb one or two questions about what he has said.

I understand what you have told us is largely based upon the Crippen report.

Mr. MACNABB: Yes, sir.

Mr. BREWIN: You have not mentioned, though I think it is brought out in the Crippen report, that one of the great values of the diversion from the Columbia as compared with the other diversions discussed would be deflecting into the North Saskatchewan basin, which might need the water first.

Mr. MACNABB: All these diversions end up with the water arriving in the South Saskatchewan reservoir. These costs include the cost of getting diversions from Peace, Athabaska, Fraser and Kootenay rivers into the South Saskatchewan river. This is what No. 4 is.

Mr. BREWIN: I may misunderstand the situation, but I thought the Columbia diversion answered the South Saskatchewan need at an earlier stage; is that not correct?

Mr. MACNABB: The Kootenay diversion would be the only one which would divert water directly into the Saskatchewan system, I believe, through the Oldman river.

Mr. BREWIN: I am sorry. I used the wrong word. The Kootenay is part of the Columbia basin. I may have put the wrong river to you. But the Kootenay diversion would have the advantage of entering the south Saskatchewan system first.

Mr. MACNABB: That is correct.

Mr. BREWIN: Through the Bow river?

Mr. MACNABB: No, through the Oldman river, I believe.

Mr. BREWIN: Is it not a fact that in the Crippen report, as mentioned in the letter of the premier of Saskatchewan of February 21, Saskatchewan views the Columbia diversion as being a major diversion to the south branch?

Mr. MACNABB: I can only refer to the conclusions of the Crippen report which state the sequence of development which they felt was advisable.

Mr. BREWIN: Suppose I read them to you from the letter of the premier of Saskatchewan to Mr. Martin dated February 21 in which he refers to a further report. I do not know whether you have seen it.

May I quote from a paper prepared by Messrs. Crippen and Stephens and delivered to the Saskatchewan resources conference of January 20, 1964:

The (Columbia) treaty requirements would introduce problems in the diversion of waters from the Columbia river, which is unfortunate since the great value of an upper Columbia diversion is, of course, that the waters can be directly routed to the south Saskatchewan river by way of the Bow river or via the North Saskatchewan and the Rocky Mountain House diversion.

Can you comment on that?

Mr. MACNABB: The diversion from the upper Columbia would take the same route as the diversion from the North Saskatchewan to the South Saskatchewan. It is not directly into the South Saskatchewan but rather into the North Saskatchewan, and then over to the Red Deer river, and then down. It is only diversions from the Kootenay which take it directly from the Columbia basin into the south Saskatchewan.

Mr. MARTIN (*Essex East*): May I clear up one thing in the question which Mr. Cameron asked. He said that the right we are talking about is a right in the future and I agree.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): To be maintained for the future.

Mr. MARTIN (*Essex East*): That is right, to be maintained for the future, and I agree. But I would call Mr. Cameron's attention once again to the real purpose of the paragraph in my letter to Mr. Lloyd of October 3, 1963, wherein I talked about 3½ per cent over the next 100 years, or 6 per cent over the next 60 years. So obviously we were talking together about a right to be exercised conceivably in the future. What I would like to add is that under the terms of the treaty, the treaty can be terminated in 60 years. There will be no need, so far as we can see now—and this is concurred in by Premier Lloyd—to divert water from the Columbia in any shorter period. However, it is noted that we have the power, and that the treaty can be terminated if it is thought desirable to do so.

I will call your attention to article XIX (2) of the treaty.

(2) Either Canada or the United States of America may terminate the treaty other than article XIII (except paragraph (1) thereof), article XVII and this article at any time after the treaty has been in force for sixty years if it has delivered at least ten years written notice to the other of its intention to terminate the treaty.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): That is quite true, but do you really maintain that after that treaty has been in operation for 60 years and after works have been established, and after communities have come to depend on it, it would be possible for any Canadian government seriously to alter the situation at that time?

Mr. MARTIN (*Essex East*): I would think so just as much at that time as now; if there were a real need in Canada, the government of the day, be it provincial or federal, would look at the situation in the light of the circumstances as they then presented themselves. But since you have addressed yourself to a right *in futuro*, I point out to you that if it is agreed by Premier Lloyd that no need is going to arise within sixty years, the problem is therefore highly academic and in any event can be corrected by the very provisions of the treaty itself.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You maintain that even after the present provisions of the treaty with regard to the disposal of waters of the Columbia have been in operation for 60 years it will be possible to reverse that provision.

Mr. MARTIN (*Essex East*): Of course, just as much as it is now. Whether it would be desirable would depend on the circumstances which confronted the authorities at that time.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am glad to have that on record.

Mr. MARTIN (*Essex East*): I cannot conceive that anything I now say will have very much weight in 60 years.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): No, but it may have some weight six months from now.

Mr. HERRIDGE: Has it been the experience in Canadian history, for example, with the Ontario hydro, that the government of the United States considered it to be unfriendly to divert power, according to their view?

Mr. MARTIN (*Essex East*): I do not think we are talking about the same thing.

Mr. STEWART: In discussing the matter of rights present and future, we are doing so in a kind of legal background. Will any arrangement be made to present before the committee evidence as to the legal situation which now prevails as between Canada and the United States, and as between the federal government and the provinces?

The CHAIRMAN: This was discussed in the steering committee and my understanding is that Mr. Olson will be heard.

Mr. MARTIN (*Essex East*): It will be up to you.

The CHAIRMAN: Mr. Olson is available, and actually the secretary of state is available for questioning, and other experts will be called. We have certainly to do this, and if the committee wishes, we will do so at four o'clock or tomorrow. We can go into any question that any committee member wishes to pursue. That does not, of course, close matters off, because we have tentative arrangements—actual formal arrangements now—with respect to British Columbia, and Gen. McNaughton has been kind enough to indicate his willingness to be here at the latter part of next week. At least, that is our hope. Moreover, we would be happy to bring back witnesses to meet the convenience of the committee.

Mr. STEWART: The reason I ask this is that I think it would be important for the committee, now that we are discussing future rights, to know the actual constitutional position, and to know what the rights of diversion for Canada would be in the absence of this treaty?

Mr. BREWIN: At some stage I wish precisely to question Mr. Martin or other witnesses in respect of it. May we have it clear that the treaty diminishes the absolute right of diversion? I wish at some stage to discuss that with the minister.

Mr. MARTIN (*Essex East*): I would be glad to do so right now.

The CHAIRMAN: Would you care to address your questions at this stage, Mr. Stewart, and we might continue with it this afternoon?

Mr. STEWART: Taking up the question of rights as between Canada and the United States, in the event that this treaty were not to come into effect, what would the legal rights of Canada or of British Columbia be in relation to diversion from the Columbia both with the treaty of 1909 in effect, and with it being abrogated?

Mr. MARTIN (*Essex East*): You mean the Boundary Waters Treaty of 1909.

Mr. BREWIN: Article II.

Mr. MARTIN (*Essex East*): We must not forget first of all, I think, that in relation to this particular discussion, what I said initially in answer to Mr. Cameron must not be overlooked. The real problem is not going to arise during the life of the treaty, and it is admitted that there is no need for diversion even for consumptive use during that period. So that the rights under article XIX are clear as well as under article XIII of the treaty. But in any event it must not be forgotten that this river is in British Columbia, and that the government of

British Columbia will be the jurisdiction which will have the right under the constitution to say what use is made of a river that belongs to it.

Article II of the Boundary Waters Treaty, Dr. Stewart, is relevant and should be read with Article XIV of the Boundary Waters Treaty. I do not know whether or not you want to go into these articles; they are there. For instance, Article II says:

Each of the high contracting parties reserves to itself or to the several state governments on the one side and the dominion or provincial governments on the other as the case may be, subject to any treaty provisions now existing with respect thereto, the exclusive jurisdiction and control over the use and diversion, whether temporary or permanent, of all waters on its own side of the line which in their natural channels would flow across the boundary or into boundary waters; but it is agreed that any interference with or diversion from their natural channel of such waters on either side of the boundary, resulting in any injury on the other side of the boundary, shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs; but this provision shall not apply to cases already existing or to cases expressly covered by special agreement between the parties hereto.

Article XIV provides for the termination on 12 months written notice given by either contracting party to the other.

Mr. MACDONALD: Mr. Chairman, I would like to ask Mr. Martin a question, not on the basis of a legal interpretation, but purely to draw on his great depth of experience in diplomacy. Is it not a fact that the absolute right of diversion of water which is claimed by the Boundary Waters Treaty specifically has been protested by the United States, and particularly in the International Joint Commission?

Mr. MARTIN (*Essex East*): I believe that is the case.

Mr. MACDONALD: With the treaty, a treaty right is recognized with regard to consumptive uses?

Mr. MARTIN (*Essex East*): Certainly.

Mr. BREWIN: On this very point, am I right that this Article II more or less amplifies the previous United States view, known as the Harmon doctrine, of the right of the upstream country to the full right of diversion which has a consequential right of damages?

Mr. MARTIN (*Essex East*): I think that is correct.

Mr. BREWIN: It gives a clear right?

Mr. MARTIN (*Essex East*): I think so.

Mr. BREWIN: I have a number of authorities which I hardly need refer to now, because I do not think you contest that. Sir Wilfrid Laurier is said to have spoken on the effect of the Boundary Waters Treaty as follows:

—if we choose to divert a stream that flows into your territory you shall have no right to complain, you shall not call upon us not to do what you do yourselves—

Do you agree with Sir Wilfrid Laurier's interpretation of the Boundary Waters Treaty?

Mr. MARTIN (*Essex East*): That is like asking me if I agreed with you on a particular point. I am not interested in what Sir Wilfrid said on this question; what I am interested in is what is the law.

Mr. BREWIN: Exactly.

Mr. MARTIN (*Essex East*): You know as well as I do that when we come to interpret what the law is, the obiter dictum of a distinguished statesman is not regarded as legal authority.

Mr. BREWIN: I thought Sir Wilfrid's view as he negotiated the treaty might have had some relevance.

Mr. MARTIN (*Essex East*): You know the courts never would allow that evidence as admissible evidence.

Mr. BREWIN: Do you agree with the proposition? Let us forget the author. I thought you would commend the statement.

Mr. MARTIN (*Essex East*): If we followed some of his views today, we would not have some of our problems.

Mr. BREWIN: I continue:

—if we choose to divert stream that flows into your territory you shall have no right to complain, you shall not call upon us not to do what you do yourselves—

Does that seem to be a correct statement?

Mr. MARTIN (*Essex East*): Well, I ask you to look at what Article II says: —the same legal remedies as if such injury took place in the country where such diversion or interference occurs;—

I prefer to examine the language of the clause and not what even a distinguished man like Sir Wilfrid Laurier might have had to say about it.

Mr. BREWIN: Is it a fact, to your knowledge, that as recently as 1952 the United States, when the International Joint Commission made a point with regard to the Waneta dam, insisted on the right of the United States to divert a river being recognized and preserved?

Mr. MARTIN (*Essex East*): I believe that is true; but I do not see the point.

Mr. BREWIN: I am suggesting to you the point is that apart from the treaty, the right of diversion, subject to some special claim for damages, is unquestioned; is it not?

Mr. MARTIN (*Essex East*): I think that is elementary; but I do not see what bearing this has on the immediate problem.

Mr. BREWIN: I would suggest the bearing is this; that the treaty justifiably you say does limit the right that would otherwise exist under the Boundary Waters Treaty.

Mr. MARTIN (*Essex East*): Because for the purpose of the treaty it is wise and necessary.

Mr. BREWIN: I appreciate that. I just want to get the limits.

Mr. MARTIN (*Essex East*): This is a treaty that is designed to provide for the co-operative development of the Columbia river basin and it involves the establishment of storage which in turn will assist in controlling the flow of water and encourage the generation of power in the United States. Those are the purposes of the treaty. The purpose of the treaty was not to provide power in some other part of the North American continent; it had a specific purpose. We are satisfied with the rights of diversion for the purposes provided for in the interpretation clause, and we believe it is in our interest to have them exactly in those terms.

Mr. BREWIN: I Just wanted to ask this question in relation to what is said at the top of page 134 of the blue book:

These provisions—

and that refers to the provisions of the treaty—

—compare favourably from a Canadian point of view with the position of diversions under the Boundary Waters Treaty, 1909 or under customary international law.

Mr. MARTIN (*Essex East*): That is right.

Mr. BREWIN: I would like to suggest to you that they clearly limit the rights of diversion which exist under the Boundary Waters Treaty Act, you say justifiably; but in fact they limit those rights.

Mr. MARTIN (*Essex East*): There is no doubt about that. I really have not understood what you are getting at; but you and I are in full agreement on this.

Mr. BREWIN: I have just one other thing on this and I will be through. Is it not a fact that there is a development in international law towards limiting this right of diversion. I think one of my colleagues here suggested that. It has been suggested in the Senate hearings in the United States that this treaty confirms the opinion of some, that there are legal rights of a neighbouring country on the water of an adjoining country, and implementation therefore of this treaty will have implications in international law limiting the right of diversion. Do you agree with that?

Mr. MARTIN (*Essex East*): Well, you are asking me about a development in international law. I think what you have said is correct; but what is more important for our purposes is whether or not Canada has obtained, with regard to the right of diversion, what it believes to be in its interest. That is the issue. What development is taking place in international law with regard to the rights of diversion is interesting, but highly academic.

Mr. BREWIN: I suggest that if the effect of the treaty is to widen the law and have an effect in limiting the right of diversion, then that has very important consequences for Canada in the future.

Mr. MARTIN (*Essex East*): I agree.

Mr. BREWIN: You agree?

Mr. MARTIN (*Essex East*): Of course. I thought you were going to refer to this because you referred to the evidence in the United States Senate. I would refer you to the statement of Lieutenant General Itschner, who was the chief engineer of the United States negotiating team prior to the treaty which was signed in January, 1961, and at page 56 of the hearings before the committee on foreign relations in the United States Senate General Itschner said:

Consumptive use is defined to mean the use of water for domestic, municipal, stock water, irrigation, mining or industrial purposes, but does not include use for the generation of hydroelectric power. Thus, either country can use the waters of the Columbia river and tributaries for consumptive uses even though this may alter the flow of a stream where it crosses boundary, without obtaining the consent of the other country.

Now, that is what the two Canadian governments wanted to get in the treaty. They have that in the treaty. Perhaps you may have wanted us to get more but that is what we went after, and that is the only issue here.

Mr. BREWIN: Mr. Martin, I think you follow the point there; our suggestion is that with the exception of the limited consumptive purpose it is very small. They mean consumptive purposes—

Mr. MARTIN (*Essex East*): No, no.

Mr. BREWIN: It does not permit real diversion.

Mr. MARTIN (*Essex East*): No. If you had been a party to the negotiations, as Mr. Dinsdale was, you would have seen whether or not this was a limited agreement. This represents a very important consideration in the minds of the two Canadian governments.

Mr. BREWIN: Just before we proceed could I just say, for the purpose of the record, that the reference I made to the minister was to the hearings before the committee on foreign relations of the United States Senate on March 8, 1961, and—

Mr. MARTIN (*Essex East*): I referred you to that.

Mr. BREWIN: —the Columbia river treaty, page 39.

I refer you to that particular passage at page 39 and, from the point of view of Mr. Kearney, who is assistant legal adviser to the United States government, he points out the treaty will be considered as adding to that body of law.

Mr. MARTIN (*Essex East*): Well, that is their view. I cannot restrict you taking a view any more than I can restrict Mr. Kearney, but I do not see the implications of this.

Mr. BREWIN: In view of the implications of this to the future interest of Canada, have any other diversions been given consideration?

Mr. MARTIN (*Essex East*): I would ask you to look at our comment at page 140 under the Boundary Waters Treaty of 1909 and following, and under the restoration of the pre-treaty legal status.

Mr. DAVIS: And, the protocol.

Mr. MARTIN (*Essex East*): Yes, and the protocol too.

Mr. BREWIN: I appreciate that.

Mr. DAVIS: Mr. Chairman, I would like to ask one or two questions in respect of compensation.

Mr. KINDT: Let us keep to the subject of rights.

Mr. DAVIS: This concerns rights and compensation. Under the present circumstances and the Boundary Waters Treaty the downstream country can enter the courts of the upstream country and obtain compensation. When the Columbia River Treaty is in effect it takes precedence over the Boundary Waters Treaty in respect of the Columbia river waters.

Mr. MARTIN (*Essex East*): Yes, that is right, over article II.

Mr. DAVIS: And, we have an unlimited right to divert for a consumptive purpose without qualification.

Mr. MARTIN (*Essex East*): That is right.

Mr. DAVIS: Without compensation.

Mr. MARTIN (*Essex East*): Yes, and without consent.

Mr. DAVIS: Yes, and without consent. In other words, once this treaty is in effect we can divert water from the Columbia basin in Canada for a consumptive purpose without having to pay compensation.

Mr. MARTIN (*Essex East*): That is right.

Mr. DAVIS: We have gained at least an economic advantage.

Mr. MARTIN (*Essex East*): Yes, that is right, and a tremendous one.

Mr. DAVIS: And, an important legal one as well.

Mr. MARTIN (*Essex East*): Very.

The CHAIRMAN: Have you a question, Mr. Nielsen?

Mr. NIELSEN: Yes, I did have, Mr. Chairman, but I have found my answer to it in the literature before me.

Mr. TURNER: That is a very useful technique.

Mr. KINDT: In following through on Mr. Stewart's question, would it not be of some advantage if the minister approached this from another angle and gave the committee the benefit of what sovereign rights Canada has lost,

given up or sold, in respect of this treaty? In other words, let us come directly to the point. This is the thought that is in the minds of the members of this committee. They want to know if Canada has lost foreign rights and, if so, to what extent. Would it be possible for you to set those out, with a ring around them, in order that everyone can understand.

Mr. MARTIN (*Essex East*): I cannot because Canada has not lost any foreign rights.

Mr. KINDT: Well, in respect of this definition of consumptive use, where dams cannot be constructed water used for the generation of electricity is a loss of a sovereign right.

Mr. MARTIN (*Essex East*): No; as we pointed out earlier sovereignty can be used, Dr. Kindt. I am sure Mr. Dinsdale never would have agreed any more than would the present government to the loss of Canadian sovereign rights. Both governments have used their sovereign power to get an arrangement which they believed to be in the best interest of British Columbia and Canada.

Mr. RYAN: I would like to ask if my reading of article XIX (1) together with article XVIII (4) makes it clear that the United States is assured of the lesser of 1,000 cubic feet per second or the natural flow of the Kootenay forever.

Mr. MARTIN (*Essex East*): Yes, but the important thing there is the word "lesser".

Mr. RYAN: Yes. In other words, there is 10 per cent limitation on the Boundary Waters Treaty?

Mr. MARTIN (*Essex East*): Yes.

Mr. RYAN: And, that is the only limitation on the Boundary Waters Treaty in the whole of this treaty.

Mr. MARTIN (*Essex East*): That is right.

Mr. KINDT: To revert to my original subject, I have a supplementary question to ask.

I am not satisfied with the answer I have received. Is it not true that we have sold certain rights under agreement?

Mr. MARTIN (*Essex East*): That is right, doctor, but under an agreement we think is useful.

Mr. KINDT: What I would like you to do, as spokesman for the government, is to set out those rights, with a ring around them. I would like you to set out what rights have been sold and where we stand as a people.

Mr. MARTIN (*Essex East*): Well, Doctor Kindt, I think we have been discussing all this.

We have not sold any rights. We have sold a service, in return for which we will be able to build storages which, in turn, will permit, at one of these, the development of power as cheaply as power will be available or is available now from any source, namely the generating of power at Mica. But, we have not lost any sovereignty nor has the United States. This is a mutual arrangement between two countries, entered into pursuant to their sovereign power, but there is not any loss of sovereignty. There is not any loss in respect of selling out our heritage; if we did this alone, if we were to build these storages by ourselves and pay for the total cost of them we would not be able to produce power at an economic level in competition with what we could do under the arrangements that have been made under this treaty.

As I said yesterday, if we have sold our heritage I would counter by saying that United States, by depending on us for the storages which the

treaty calls for, would be putting themselves in a state of dependence. And, by the way, it is very important to note that the United States has built some storages. I understand one storage is now under construction.

The suggestion is that United States cannot possibly, or would not have built any storages on its side. I do not think that is supported by the facts as stated in the record.

This is an arrangement between two countries in their common interests and the treaty is one that is terminable pursuant to its provisions. I do not think Canada has lost any sovereign feature because it has joined the United Nations or because it joined the North Atlantic Treaty Organization. Nor do I think it is less autonomous because it has limitations imposed on it by its own act. I do not think there has been any loss of sovereignty.

Mr. HERRIDGE: Mr. Chairman, I should like to quote from page 166 of this blue book. The statement to which I am referring reads as follows:

In the event that there would be an impression that the Treaty established a principle or precedent restricting Canada's freedom to develop other international rivers (e.g. the Yukon) in the manner most advantageous to Canada this Item states clearly that the Columbia arrangement does not establish any such principle or precedent and, moreover does not affect the application of the Boundary Waters Treaty, 1909 to other international rivers in Canada.

How does the minister reconcile that statement with the obvious opinion of the prominent United States counsel before the Senate committee who have indicated repeatedly that they consider this treaty makes a change in international law?

Mr. MARTIN (*Essex East*): First of all I should like to ask you to give me the citations in respect of your quotation. Assuming you do this, I may state that because an individual makes a comment about the implication of a treaty it does not alter the meaning of the treaty. I have the highest respect for what you say, Mr. Herridge, but there have been some occasions, notably during discussions in respect of the Columbia, when you have said things that I do not regard as authoritative in a legal sense.

Mr. HERRIDGE: I am sure you would not.

Mr. DAVIS: The statements to which the member refers were made prior to the establishing of the protocol.

Mr. MARTIN (*Essex East*): Could I ask to have the statements to which you have referred?

Mr. HERRIDGE: I do not have the record with me.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I have a copy here, Mr. Herridge. Read that portion to him again. Begin at the bottom of page 38 and proceed to the top of page 39.

Mr. HERRIDGE: I will read from page 38 of the report of this hearing beginning with Mr. Kearney as follows:

Well, this is a branch of international law which is currently in the process of evolution. It is very active at the moment, and this treaty, for example, is going to be one of the major points of development for international law in this respect.

Mr. MARTIN (*Essex East*): I think that is correct, but I do not think that adds any support to what you said about the comment appearing at page 166.

Mr. HERRIDGE: Perhaps I should read a little further, Mr. Chairman.

Mr. MARTIN (*Essex East*): Mr. Herridge, what you continue to overlook is the provision in section 12 of the protocol which states:

Canada and the United States of America are in agreement that the Treaty does not establish any general principle or precedent applicable to waters other than those of the Columbia River Basin and does not detract from the application of the Boundary Waters Treaty, 1909 to other waters.

That is a provision of the treaty.

I know Mr. Kearney. He is a very outstanding international law lawyer, but his comment was made before the protocol was formulated. Notwithstanding that, what Mr. Kearney says in principle is correct. Every treaty developed between two countries does contribute in some way to the development of the body of international law. That is elementary and that is all he is saying. What is important is that provision in the protocol itself which clearly says that this does not establish any general principle or precedent applicable to waters other than those of the Columbia.

Mr. HERRIDGE: I quite agree with your interpretation there, but Mr. Kearney goes on to say:

I think Senator, that this treaty will be considered as adding to that body of law.

However, I would say that the trend in international law is strongly toward the establishment of the principle that an upstream riparian state cannot deal with the waters within its borders which cross its boundary to a downstream riparian state in such a way as to seriously impair the rights or interests of the downstream riparian state.

My argument is that the whole direction of the development of the law is to abrogate Article II of the Boundary Waters Treaty.

Mr. MARTIN (*Essex East*): Mr. Herridge I simply say that I do not disagree with this evidence Mr. Kearney has given. This is a correct statement but it was made in light of the documentation existing at that time. That evidence was given on March 8, 1961.

Mr. HERRIDGE: Yes.

Mr. MARTIN (*Essex East*): The protocol was only negotiated in 1963 and became effective as between the two governments, subject to ratification, in January of 1964. Surely there is nothing to be gained by this line of reasoning.

Mr. HERRIDGE: My reading of history leads me to believe that when you declare something is not setting a precedent you are making preparation for it to be a precedent.

Mr. MARTIN (*Essex East*): While that may be true I do not know what application that has.

Mr. DINSDALE: Mr. Chairman, I think it is obvious from the repeated reference by the minister of external affairs that he agrees that the former administration negotiated a wise treaty.

Mr. MARTIN (*Essex East*): I have said that I believe that treaty negotiated and signed in January, 1961, was a good treaty.

Mr. DINSDALE: Yes.

Mr. MARTIN (*Essex East*): What we have sought to do is improve it.

Mr. DINSDALE: I think perhaps one point has missed the minister's attention. There are other aspects outside the treaty which I think should be recalled at this point of our committee discussions. This was essentially a treaty to bring power benefits to both countries. It seems to me, having listened to the questions this morning, that there is some anxiety in respect of the loss

of future power potential to Canada. I should like to point out that the whole concept of the national power grid was an adjunct to this treaty.

Mr. MARTIN (*Essex East*): That is right.

Mr. DINSDALE: There have been certain discussions taking place with provincial governments in respect of this matter and it might be helpful and allay some of the anxiety here if we had some technical information concerning the prospective national power, particularly in reference to the use of the tremendous power potential of the Columbia, the Yukon and the MacKenzie.

Mr. MARTIN (*Essex East*): I think this would be vital to the discussions and when representatives from British Columbia appear before this committee next week I think it would be important to ask them about the prospective power potential in British Columbia. I think this is a very important subject.

Mr. DINSDALE: These grid studies have been proceeded with for several months now, yet there has been no public information.

Mr. MARTIN (*Essex East*): You might be interested if I just recall your attention, Mr. Dinsdale, to the provision in the agreement between Canada and British Columbia, and I refer to clause 16 subsection (2) which states:

Subject to the requirements of British Columbia, British Columbia will make available to other provinces of Canada, through a national grid or otherwise, on a first call basis, electric power from the Columbia river and other power developments in the Province of British Columbia at prices not higher than those obtainable by British Columbia from time to time from the United States of America for any comparable British Columbia entity electric power exported thereto.

Mr. DINSDALE: I should like to ask one more question by way of clarification. In his initial statement the minister referred to the statement on the national power policy that was made last October in the House of Commons. Could he indicate in what manner this policy departs from the policy that was enunciated in connection with the agreement to study the Nelson river? The two points that are mentioned on page 19 are:

- (a) To encourage development of large low-cost power sources and to distribute the benefits thereof as widely as possible through interconnection between power systems in Canada, and
- (b) To encourage power exports and interconnection between Canadian and United States power systems where such might induce early development of Canadian power resources.

It seems to me that before an agreement could be concluded with the province of Manitoba, for example, to study the power potential of the Nelson river, these two points had to be clearly understood. Is this breaking any new territory at all or were they merely repeating what had already been enunciated in connection with the Nelson power study which got underway in February of 1962?

Mr. MARTIN (*Essex East*): I do not know what you mean; is it new to the discussion here this morning? It is new material and it is very interesting. It is part of the general context.

Mr. DINSDALE: It was mentioned in committee the other day as a new statement of national power policy.

Mr. MARTIN (*Essex East*): I quoted the statement of the Minister of Trade and Commerce; another appropriate paragraph appears at the top of page 20, where it is said:

The Columbia river treaty should be viewed, therefore, as a greatly significant effort toward the advancement of regional and national

energy programs that include not only the idea of regional and national electrical energy interchanges and grids, but perhaps even more urgently, the exploitation of hydro power resources wherever the Canadian potential and United States markets can accommodate each country's needs and interests.

Mr. DINSDALE: It seems to me this is merely a re-statement of the policy that was enunciated in February of 1962.

Mr. MARTIN (*Essex East*): I think in principle that is the case.

Mr. NIELSEN: Is there any difference in detail?

Mr. MARTIN (*Essex East*): I do not think so. I think you and I are fully agreed on this, Mr. Dinsdale.

Mr. TURNER: I wonder whether I might make a motion for adjournment?

The CHAIRMAN: I have the following on the list of people who would like to continue questions: Mr. Deachman, Mr. Macdonald, Mr. Ryan, Mr. Leboe, and Mr. Turner. Doubtless there are others who have not so indicated. Would we find it convenient to reconvene at four o'clock?

It is agreed.

AFTERNOON SESSION

THURSDAY, April 9, 1964.

The CHAIRMAN: I call the meeting to order.

Gentlemen, Mr. Martin would like to deal with a matter that was raised this morning.

Mr. MARTIN (*Essex East*): Dr. Kindt, you asked a question and I promised to put on the record more detail with regard to that question which you raised on Tuesday. Rather than considering the lump sum payment to Canada of \$274,800,000 in October this year, let us look at the year by year value of the energy which Canada is selling at 4.4 mills per kilowatt hour.

Mr. KINDT: Is that in Table 9?

Mr. MARTIN (*Essex East*): It has reference to the table but my commentary now is in answer to your question. If we look at the year by year value of the energy which we are selling at 4.4 mills, we arrive at the following results. The arithmetic sum of the value of the yearly amounts of energy sold would be \$572 million; that is up to the end of the sale period, up to the end of the 30 years.

Mr. KINDT: Yes.

Mr. MARTIN (*Essex East*): That is obtained by adding all the items in the table on page 99 under the title; "Agreed entitlement"?

Mr. KINDT: Are those figures in dollars in that table?

Mr. ROBERTSON: No, they are kilowatt hours.

Mr. KINDT: That is what I thought.

Mr. MARTIN (*Essex East*): It is agreed entitlement.

Mr. KINDT: What you would do is take the 4.4 and then get the summation; that is, the arithmetical average would give you 572 million.

Mr. MARTIN (*Essex East*): You said average; it is the arithmetical total.

Mr. KINDT: Yes, the arithmetical total. Would you not use your 4 per cent and compound every year?

Mr. MARTIN (*Essex East*): You just add that.

Mr. ROBERTSON: You could do that.

Mr. KINDT: Everywhere else in this you use the compound interest.

Mr. MARTIN (*Essex East*): Dr. Robertson said you could.

Mr. KINDT: And this would go up to over a billion and there is a lot of difference between 572 million and a billion.

Mr. MARTIN (*Essex East*): You could, I suppose, deal with it in different ways, but that is how that figure is reached.

Mr. KINDT: I have one other point on that; I am not through with that question. That is at $4\frac{1}{2}$ per cent—

Mr. MARTIN (*Essex East*): 4.4 mills.

Mr. KINDT: But when you applied $4\frac{1}{2}$ per cent to each one of the years and then summated that, did it equal 274?

Mr. MARTIN (*Essex East*): Two hundred and seventy-five.

Mr. KINDT: Two hundred and seventy-five million?

Mr. MARTIN (*Essex East*): And 5 per cent would be 254 and 4 per cent would be 294.

Mr. KINDT: Are those figures available?

Mr. MARTIN (*Essex East*): They will now appear on the record. I am just giving them to you from my notes. These are the calculations we have made. The reason for the use of the $4\frac{1}{2}$ per cent interest rate in the sales agreement, which was another question which you mentioned, is simply that it is the appropriate interest rate for the non-federal utilities which will be raising the money in the United States. It is a matter of using the current rate. This is explained on page 174 of the paper which we gave in the House of Commons on March 3.

Mr. KINDT: Well, it takes a little swimming around in those figures to see whether it should have been 4 per cent or whether it should have been $3\frac{1}{2}$ per cent, or to see what percentage should have been used.

If you go back over the past 30 years and take the historical average of interest rates where the government is behind the securities that are issued, or behind the project, you will not find it coming out at $4\frac{1}{2}$. So what is usually done in studies of this kind is to try different interest rates and to see whether the sum total makes what looks like a reasonable figure of \$274 million and then justify it after you have the figure, after you have the interest rates worked out.

If it came out to $4\frac{1}{2}$ and the mathematics of it are correct, then I have nothing to say except that if a lower interest rate had been chosen—say 4 per cent—it would have meant several million dollars more to British Columbia for the purchase of this power, because that set the value, as I understand it.

Mr. MARTIN (*Essex East*): This is a current rate. This is a purchase by private utilities, and the $4\frac{1}{2}$ per cent represents the current rate. It is what they will have to pay and what the market demands. You see, this is a purchase by private utilities in the United States.

Mr. KINDT: That is what they might have to pay if they went out tomorrow and did it. Will they have to do that?

Mr. MARTIN (*Essex East*): That is exactly it.

Mr. KINDT: Supposing it is 10 years from now, what would it be? After all, this is for 30 years.

Mr. MARTIN (*Essex East*): It has to be done right away.

Mr. KINDT: It is a 30-year proposition and you are assuming it is going to be $4\frac{1}{2}$ per cent in all the 30 years?

Mr. MARTIN (*Essex East*): The payment has to be made on the date of ratification, which date is set for October 1.

Mr. KINDT: You are right there.

Mr. MARTIN (*Essex East*): They will have to raise it now.

Mr. RYAN: Mr. Chairman, I have a few questions I would like to ask.

First of all, I would be interested to know the view of Alberta. We have heard about Saskatchewan and British Columbia, and as Alberta is in the middle I wonder if the minister will be good enough to tell us about that.

Mr. MARTIN (*Essex East*): I have had no correspondence with Alberta.

Mr. RYAN: I take it there has never been any complaint from Alberta?

Mr. MARTIN (*Essex East*): No.

Mr. RYAN: If Libby is built under United States option, can the United States operate Libby in a way that will make it impossible for us to derive the downstream benefits from west Kootenay in western Canada that come from the Libby dam?

Mr. MARTIN (*Essex East*): Your question was: can the United States operate Libby in a manner that would make it difficult for us to derive the downstream benefits?

Mr. RYAN: Yes, that is on the return flow of the Kootenay back into Canada.

Mr. MARTIN (*Essex East*): The controls provided by the treaty and the ability of Canada to re-regulate the flow of the Kootenay river in Kootenay lake would adequately protect Canada's generating potential on the Kootenay river downstream from Libby.

I think that is a correct statement. Mr. MacNabb perhaps would care to amplify that.

Mr. MACNABB: I think the suggestion is that they might be able to operate Libby in a way which would cause quite wide fluctuations in stream flow which Canada could not control adequately. But we do not believe this is the case. We have looked at it in a number of ways. The most radical type of operation, we feel would be to operate Libby as a daily peaking plant; it might only operate two hours out of twenty four and at full capacity during those two hours. Then we tried it operating for five hours, seven hours and 10 hours to get the worst possible case. You have 125 miles of channel between Libby and Kootenay lake which has a very considerable modifying effect on these surges of water and would flatten them out considerably. But even if we do not consider this channel storage, assuming that Libby is discharging directly into Kootenay lake, the worst possible condition of Libby peaking operating on a daily basis would result in a fluctuation of only one-tenth of a foot on Kootenay lake.

Mr. RYAN: What effect would that have on the lake?

Mr. MACNABB: The lake is under Canadian control, limited by an International Joint Commission order, but west Kootenay can operate the levels of that lake under that order so they can regulate it to suit the requirements of the plants of Canada.

Mr. MARTIN (*Essex East*): I hope Cominco will be called here as a witness because we visited that plant and this is of tremendous significance to them in terms of low cost power. I think this is one of the very great advantages.

Mr. RYAN: Mr. Minister, if Libby be not built under the United States option, are they free to divert any of that water?

Mr. MARTIN (*Essex East*): We are.

Mr. RYAN: No, in the States, I mean. Are they free to divert any of that water in the Kootenay?

Mr. MARTIN (*Essex East*): We could not prevent them from doing what they wanted to do.

Mr. ROBERTSON: Only for consumptive purposes.

Mr. RYAN: Only for consumptive purposes?

Mr. ROBERTSON: Yes.

Mr. RYAN: Suppose after 100 years we reduced the flow of the Kootenay to Montana to 10 per cent of its flow. Then the United States would be free to stop the whole of the return flow of Canada at the Idaho border, if the treaty were no longer in effect. That is to say, if after 100 years, under our right to divert, we have reduced the flow of the Kootenay flowing south down to 10 per cent, as we are entitled to do, we can take 90 per cent of the water.

Mr. MACNABB: That is right.

Mr. RYAN: While the United States, is turn, with what it has left, the 10 per cent, plus what it was from its Kootenai tributaries in the United States would be free to do what it wanted to do with its waters. It could stop them from coming back across the Canadian border, and our plants could be in trouble.

Mr. MACNABB: That would be after the termination of the treaty.

Mr. RYAN: Yes. We both have bargaining powers. There is still a very good bargaining position in the hands of both parties there.

Mr. MACNABB: That is right.

Mr. HERRIDGE: Is there anything to prevent the United States authorities from diverting water for consumptive purposes by gravity rather than by letting it flow into Kootenay lake?

Mr. MACNABB: No.

Mr. RYAN: According to their law, do they not have an established right for which they must pay damages when we come to exercise our option?

Mr. MACNABB: I would think that the Columbia treaty would be the law, otherwise they could make consumptive diversion.

Mr. HERRIDGE: The rule is first in use, and first in right under that situation.

Mr. MACNABB: If it is a diversion for consumptive use, the right is acquired for both countries.

Mr. HERRIDGE: We would have very little left by the time it came to exercising our right.

Mr. MARTIN (*Essex East*): Oh no, no.

Mr. RYAN: I am not sure. If we had to make these diversions and have 90 per cent of the upper Kootenay waters diverted into the upper Columbia, or take them across the Rockies, wherever we may want to take them, we can make these diversions without paying any damages for downstream injurious affection in the United States. Is that correct? This treaty makes it clear that we have to pay no damages whatsoever.

Mr. MARTIN (*Essex East*): What is that again, please?

Mr. RYAN: We can take a diversion, taking 90 per cent of the east Kootenay waters, and pay no damages for injurious effects downstream. But on the return of waters coming up into Canada, they would have to pay damages for injurious effects on our power plants, otherwise. Would that be correct? This is a little involved, I realize. But may we not divert water, are we not entitled to do that over a 100 year progressive period of 20, 60 and 80 years? And suppose we do take 90 per cent of the east Kootenay water before it crosses the border, then we are free of any claim for all time for injurious effects downstream in the United States.

Mr. MACNABB: There is no legal liability, that is, under the Columbia River Treaty.

Mr. RYAN: What about on the return when the river comes back into Canada up through Idaho there and into Kootenay lake? If they cut off the water coming back to Canada can we make a claim for injurious effects, for damage done in Canada, by their cutting off our water?

Mr. MACNABB: During the life of the treaty they cannot divert for power purposes, but only for consumptive use purposes; and if they do it for consumptive use purposes, then we have no claim. After the treaty they can do it for either purpose, and there is still no claim against them under the treaty.

Mr. RYAN: If they did it after the treaty, would we not have a claim against them for injurious effects?

Mr. MARTIN (*Essex East*): Just a second. There is another point to this. Are you thinking about article IV of the treaty?

Mr. RYAN: I did not have article IV in mind, no sir.

Mr. MARTIN (*Essex East*): Perhaps Mr. Olson may speak to that.

Mr. RYAN: Maybe I might let the question stand to give Mr. Olson a chance to look at it over night.

Mr. MARTIN (*Essex East*): You are talking about a diversion during the treaty for consumptive use?

Mr. RYAN: No, no. I thought it was pretty clear.

Mr. MARTIN (*Essex East*): So that there will be no confusion, would you mind repeating your question?

Mr. RYAN: If we should make this progressive diversion over the 100 year period from the east Kootenay where it flows south across the border into Montana, and we leave only 10 per cent of the river flowing into the United States, which I understand is assured to the United States under this treaty, then I would take it that the Americans can make no claim whatsoever against us for injurious effects downstream in the United States with respect to such diversion. Very well. Now, suppose we have terminated the treaty, but the Americans decided that they want to cut off the northward flow of the Kootenai into Kootenay lake, or to stop the flow in whole or in part, do we then have a claim for injurious effects for damage done to our plants and property in Canada?

Mr. E. R. OLSON (*Department of Justice*): It would depend on what the international law was at that time, and if the Boundary Waters Treaty were enforced. You would have the same question which arises under article II in that respect which we discussed this morning. If that treaty was not regarded as the law, then the question would be determined in accordance with international law.

Mr. RYAN: Thank you.

Mr. GELBER: I understand that according to the Columbia River Treaty, a claim cannot be pursued in Canadian courts as it could under the treaty of 1909. Is that just for the life of the treaty, or is that to be the law for all time?

Mr. OLSON: Once a diversion is lawfully instituted under the Columbia River Treaty, that is the end of the matter, and it would not be possible after the Columbia River Treaty were terminated, for people then to obtain prospective or retroactive damages, on the assumption that there was an action maintainable in Canadian courts in any event.

Mr. GELBER: So even after the life of the Columbia River Treaty, the treaty of 1909 remains modified to that extent?

Mr. OLSON: In so far as diversions are concerned that have been lawfully instituted under the Columbia River Treaty, such diversions could be carried on.

Mr. LEOE: Am I correct in my impression that international law at the present time makes it illegal to interfere with establishments already on these rivers by diversion of water, as it might happen if the Kootenay were diverted at the present time? People could not interfere with the present West Kootenay power development. Would that not apply when it comes to later years?

Mr. OLSON: I am sorry, but I have lost you. Would you mind repeating your question.

Mr. LEOE: I am sorry. My understanding is that any power which is at present on this river, by international law must be maintained by the flow of the water without any interference.

Mr. OLSON: I am sorry; to what portion of the international law are you referring that has that effect?

Mr. WILLOUGHBY: Not being a legal man, I am just asking the question; am I correct in my impression?

Mr. OLSON: The situation now in so far as those plants are concerned is that their protection lies in the Boundary Waters Treaty, whatever that protection might be.

Mr. WILLOUGHBY: Any diversion from that river would be illegal at the present time?

Mr. OLSON: Well, it would involve a question of the rights under the Boundary Waters Treaty.

Mr. MARTIN (*Essex East*): That is provided for in Article II of the Boundary Waters Treaty where, if there was any injury on the other side of the boundary, they are given rights and are entitled to the same legal remedies as if the injury took place in the country where the diversion interference developed. That is provided for in the treaty.

Mr. WILLOUGHBY: Because of the fact that Libby is not developed at present, we would have the rights to divert that water at the end of the treaty, but they would not have the rights to divert water out of the Kootenai unless the Boundary Treaty is changed.

Mr. OLSON: Is that on the assumption that the Columbia River Treaty is in force? The existence of these structures, I do not think, relates to the right to divert. They very well may relate to the question of the compensation, if any; but if you otherwise have the right to divert, the existence of structures on one side or the other does not interfere with that right, but it does relate to the question of compensation.

Mr. BREWIN: On a point of order; you do not want us, Mr. Chairman, to go into the legal questions in respect of rights of diversion now. Mr. Olson will be available later?

Mr. MARTIN (*Essex East*): Oh yes.

Mr. GROOS: My question, Mr. Chairman, is for Mr. MacNabb. In this table on page 52 of the presentation, you refer to the cost of the various diversion schemes. In the case of the Columbia river, Surprise reservoir diversion, where we have the highest dollar per acre foot cost, could Mr. MacNabb tell me on what basis this figure was arrived at? Particularly they must have taken into account the cost of the electrical power to be used in transporting this water from the Columbia to the South Saskatchewan reservoir. I wonder what cost figure per unit of power was being used?

Mr. MACNABB: They assume the power they would need to drive the pumps—the 13.3 billion kilowatt hours annually—they could obtain for three

mills. The power they would try to recover on the eastern slopes of the mountains they assumed they could develop at one mill per kilowatt hour, and the power they were developing at one mill per kilowatt hour would have a value on the eastern slopes of three mills; so, they would have a profit of two mills to apply against the diversion plan.

Mr. GROOS: Where do they expect to get this three mill power?

Mr. MACNABB: From the Columbia development.

Mr. PUGH: My question is for Mr. MacNabb. As I understand it, the diversion was satisfactory for consumptive purposes, but not for power. Tuesday, when the minister was making his statement describing this, he stated it could be used for power. He said there was some question in respect of it, but it was quite all right to use it for power. Is that so, or is it not? I asked if this was made a subject of the protocol.

Mr. MARTIN (*Essex East*): I said the primary use must be for irrigation, for consumptive purposes which would include irrigation. If it could be used incidentally for power and that was not the primary use, my interpretation is that could be done. That was the argument between Mr. Brewin and me this morning. He wanted to know why we could not spell it out. The important thing is to make sure that the diversion is first for a consumptive use as defined in the treaty.

Mr. PUGH: Yes; and that is as I understood it. However, you went on further to say, when I asked if this had been the subject of protocol, no, but that you had understood this was quite in order.

Mr. MARTIN (*Essex East*): What I think I said this morning was that I had given my interpretation during our negotiations. This was not the subject matter of the protocol. My interpretation of that clause in respect of the right of diversion was as I stated with regard to the incidental use for power.

Mr. PUGH: We can divert for consumptive use and incidental to that consumptive use if we can use it for power it will be quite all right; does that mean the water then would have to be returned to the river?

Mr. MARTIN (*Essex East*): No, no; there would be no way of doing it.

Mr. PUGH: I just wanted to nail it down. It does seem to me to be fairly important.

Mr. MARTIN (*Essex East*): We will put it another way. This morning I argued with Mr. Brewin that there is a clear right to make diversion out of the Columbia river for consumptive uses. The authority for that is Article XIII(1) of the treaty. Item 6 (1) of the protocol states explicitly that this right of diversion exists. I also mentioned that General Itschner, who was the former head of the United States corps of army engineers, and who was part of the United States delegation that negotiated the treaty up to 1961, accepts this to be the case in the testimony before the United States Senate committee on foreign relations which we quoted this morning. The reference in the interpretation article to the generation of hydroelectric power is intended to make plain that none of the broad terms used to define the consumptive uses which can provide the justification for our diversion, such as municipal or industrial purposes, include the generating of electric power. That does not mean that a diversion which is justifiable on the basis of one of the specified consumptive uses cannot in the process develop some electric power. That is what I said. I argued that if a large flow of water, being diverted quite properly for a genuine consumptive use was to be used to produce a kilowatt of power without affecting the flow of the water, it would be absurd to suggest that that would be prohibited. Such a consideration would involve wasteful use of a resource and would not make economic, legal—or common—sense. So, the reasonable position surely is that if a diversion is genuinely for a

consumptive use, it can be made. If it is not genuinely for a consumptive use, it cannot be made on the pretext that it is for such a use. If power is produced from the water that it is justifiable to divert for consumptive use, that would not affect the legality of the diversion. That is the way I interpret it.

Mr. HADASZ: On page 39 of the blue book, midway down the last paragraph, our attention is drawn to a limited diversion of the Kootenay river. I assume that relates to the east Kootenay river. Reference is made to studies of power development carried out independently by Canada. Would you please tell us, Mr. MacNabb, what studies were undertaken independently by Canada, at whose request, and the dates of these studies?

Mr. MACNABB: Well, the original reference on the Columbia was made in 1944, I believe, and since that date there have been a great number of studies Canada has made, some of which have considered international development and others which have considered independent development by Canada.

Mr. HADASZ: What do you mean by the word "independent"?

Mr. MACNABB: What Canada could produce in the way of power from the Columbia basin if they undertook to do it completely independently of the United States, there being no downstream benefits from the United States and no flood control benefits. To set about to develop the river by reason of the amount of power we could get out of it independently and taking into consideration the various plans of development which would be required. It would be difficult to describe this in a short term. These studies have gone on for years.

I have a report here which, if the committee wishes, I could table and then I could read from it in order to show you the results of the studies, which would indicate that the limited diversion plan at Canal Flats was the best for Canada.

Mr. HADASZ: Is that in respect of diversion for hydroelectric power or for irrigation?

Mr. MACNABB: For hydroelectric power, which is the greatest benefit within the basin.

Mr. MARTIN (*Essex-East*): If I may interrupt, I think this is one of the vital questions and I do think it would be useful if Mr. MacNabb was allowed to expand on this.

The CHAIRMAN: Is it agreed that this report be tabled?

Some hon. MEMBERS: Agreed.

Mr. MACNABB: Then I will have copies of the report passed around. I will wait until you receive the report and then I can refer to it.

Mr. PUGH: I have a supplementary question. How less effective is the present plan under the treaty as against the suggested original Canal Flats plan.

Mr. MACNABB: The present plan complements the Canal Flats one. Twenty years after ratification we can make a diversion at Canal Flats.

Mr. PUGH: But I am referring to the present time. As I understood originally the first idea was a very heavy diversion at Canal Flats.

Mr. MACNABB: No. We studied a number of diversions. At Canal Flats. We studied plans with no diversion at all, leaving the Kootenay river in its present channel; and then we went to the next step, a limited diversion at Canal Flats, which would be produced by a not too expensive dam at Canal Flats.

If you refer to your presentation paper at page 38 of the blue book you will find a picture there of Canal Flats; you will see the Kootenay river in the foreground and Columbia lake in the background which is the headwaters of the Columbia river. So, you can see it is a very simple diversion to take

Kootenay river water and pass it across the flats into the headwaters of the Columbia. So, this produces very low cost power on the Columbia river.

Then we went to other stages of development; we would build a dam at Copper creek farther down and store water on the Kootenay and the headwaters of the Columbia. Then we went one stage further, to the Bull river-Luxor diversion, and finally we considered the dam right at the border, the Dorr project, which would pump water up the Kootenay against the natural flow into the Bull-Luxor reservoir and then on down the Columbia.

We studied about five different phases of diversion and, if I could refer to this report which has been passed out, perhaps you can see how we went about this.

Mr. MARTIN (*Essex East*): If I may say so, this is one of the important matters and I think it would be very useful if we expanded on this.

Mr. PUGH: Why was the diversion at Canal Flats not one of the initial steps then?

Mr. MACNABB: It was not worth while making a diversion of Kootenay water which could be utilized at the plants on the Kootenay river if we have nothing on the Columbia to divert it to. There is no use of diverting water into the Columbia if you have no way of using it. So, the logical step was to develop the projects on the Columbia first and, when they are developed, and you have a greater head on the Columbia, then you start and take water from the Kootenay.

Mr. PUGH: Just in respect of that and in order to get a better idea of the planned diversion at Canal Flats in 20 years time, how much of the main stream of the Kootenay would that cut off?

Mr. MACNABB: That would take about 20 per cent of the flow of the Kootenay river where it crosses the international border on its flow south, and this is the diversion that is permitted by the treaty 20 years after ratification.

Mr. HERRIDGE: Mr. Chairman—

The CHAIRMAN: If I may interrupt, Mr. Herridge, I am a little confused at the present time. I had a list consisting of yourself, Mr. Turner and then Mr. Fleming. Now, I do not think we should divert from the subject until we have exhausted it. Does your question pertain to what has been discussed?

Mr. HERRIDGE: No; my question is in respect of something else.

Mr. MARTIN (*Essex East*): Would you excuse me, Mr. Herridge. Mr. Pugh's questioning has resulted in the introduction of this report which, I think, you will find is one of the fundamentals of this whole proposition, and I think it would be of great assistance to the members of the committee, Mr MacNabb, if you would go through it, because understanding this is a very vital thing.

The CHAIRMAN: Is that agreed?

Some hon. MEMBERS: Agreed.

Mr. HERRIDGE: First of all, Mr. Chairman, I have two questions.

Is it correct to say in the commencement of the first negotiations several meetings were conducted on the basis of sequence 9(a) and it had the support of the officials of the water resources branch.

Mr. MARTIN (*Essex East*): Mr. Herridge, this is dealt with in the blue book around page 73.

Mr. MACNABB: Pages 66 and 68.

Mr. MARTIN (*Essex East*): We deal with that, Mr. Herridge. I know you could not get here because of the bad weather in a country that is generally void of bad weather. However, we did go into this with some care, and if you

would look at pages 66 and 67 of the presentation I think you will find this matter is well covered.

Mr. HERRIDGE: I have a further question; could we have the minutes of the negotiating committees, both the former government and this government, tabled?

Mr. MARTIN (*Essex East*): Well, these are privileged documents. This happened under a former government and these minutes are absolutely privileged. First of all, we would be open to censure by the United States. In my opinion, the notes of negotiation are obviously privileged. Although you can ask any question in respect of policy, I do not think you have the right to ask for the tabling of these.

Mr. MACNABB: This report deals with the water resources investigations by the water resources branch of the federal government.

The purpose of the report is to provide a very brief resume of investigations carried out by us for the federal government in connection with its studies of plans for the development of the water resources potential of the Columbia river basin in Canada.

Mr. KINDT: Potential for what?

Mr. MACNABB: Power.

Mr. KINDT: Only power?

Mr. MACNABB: Yes.

Mr. KINDT: Not multiple purposes?

Mr. MACNABB: No. They are referred to in the presentation paper. But, in the course of these studies we did investigate the irrigation prospects of the Columbia basin itself and, in the course of the investigation of what reservoir areas would be flooded, we studied the potential of these areas.

Mr. KINDT: I think defining terms is the first thing which should be done in respect of a study such as this in order that it may be understood. Having regard to this particular study what does the word "potential" mean?

Mr. MACNABB: This means water resources potential primarily for power.

Mr. KINDT: Did you say primarily?

Mr. MACNABB: That is right.

Mr. KINDT: Do you mean exclusively?

Mr. MACNABB: No, I mean primarily.

The CHAIRMAN: Gentlemen, I think if we are going to make progress it will be helpful for members of the committee to make small notes of these terms as we proceed.

Mr. KINDT: I do not agree with you. I want to know what the definition is in respect of the word "potential" as used in this report.

The CHAIRMAN: I think it might be helpful if we allow the witness to complete a paragraph before we ask questions. Of course I am in the hands of this committee. I feel that if we wish this to be developed in some logical way by Mr. MacNabb we should allow him to proceed paragraph by paragraph and then ask questions in regard to that which he has read. I do not think it is fair to check Mr. MacNabb.

Mr. KINDT: I am not checking him.

The CHAIRMAN: I am afraid if we proceed in the way we have been doing we will not allow him to place this information before the committee in a cogent manner.

Mr. KINDT: I am not checking Mr. MacNabb, Mr. Chairman. Perhaps you would allow me to complete my suggestion.

The CHAIRMAN: As you appreciate, there will be individuals reading the Minutes of Proceedings and Evidence who will not be in possession of this report which we have before us and, accordingly, it would seem reasonable to present the material in some sort of orderly way.

Mr. KINDT: With all due respect, Mr. Chairman, I have yet to see a report as voluminous as this presented without first of all a definition of terms being made so that those individuals listening to the explanation will understand what it means. All I am asking for is a definition of the word "potential".

Mr. HERRIDGE: Mr. Chairman, I should like to make a suggestion in regard to an orderly record. Would it be agreeable to allow Mr. MacNabb to read a paragraph and then ask him questions in respect of that paragraph?

The CHAIRMAN: Is that agreeable?

Mr. DEACHMAN: Mr. Chairman, I would suggest that we proceed in the same way we proceeded with the minister's report, allowing Mr. MacNabb to go through this report touching the highlights and then ask him questions in respect of the whole subject. We have followed this procedure in respect of the minister's report and I feel that we progressed in a very satisfactory manner.

Mr. KINDT: We will then know nothing about it until he has finished.

Some hon. MEMBERS: Agreed.

Mr. HAIDASZ: I am in favour of the procedure suggested by Mr. Herridge.

The CHAIRMAN: Is this agreeable to the committee?

Some hon. MEMBERS: Agreed.

Some hon. MEMBERS: No.

Mr. HERRIDGE: I think perhaps we should just deal with a paragraph at a time and ask questions in relation to that specific paragraph rather than ask questions about subjects covered generally by the report. This procedure would allow us to make progress and keep the record in order at the same time.

Mr. MARTIN (*Essex East*): Mr. Chairman, I would suggest perhaps the procedure we should adopt is to allow Mr. MacNabb to answer the question which can be done quickly and then proceed. I think the doctor wants to be helpful.

Mr. KINDT: I am only asking to be allowed to be helpful. I understand Mr. MacNabb is ready to answer the question if we allow him to do so.

Mr. MACNABB: The answer is contained on page 36 of the presentation paper which refers to this same study.

Mr. KINDT: Let us find the page before you read it.

Mr. MACNABB: The relative portion reads as follows:

Such studies of the Columbia river basin in Canada concentrated on the development of the river for power, not only because of the complexity of this aspect of the problem, but because the development of power appeared as the largest and most valuable benefit from the resource. The studies of the whole of the Columbia river basin which were being carried on simultaneously by the International Columbia River Engineering Board also concentrated on power development. Conclusion (e) of the board's 1959 report to the International Joint Commission stated in part:

The largest and most valuable benefit to be obtained from water resources developments in the Columbia river basin is the production of hydroelectric power.

In the process of studying the power potential of the basin in Canada the investigations carried out in the reservoir areas of the proposed projects indicated to some extent the beneficial or detrimental effect

the various plans of development would have on the use of the river valleys for irrigation, agriculture, forestry, mining, manufacturing, fish and wildlife, recreation and transportation. This chapter briefly reviews the results of those studies as they relate to strictly independent development in the Canadian portion of the basin.

The presentation then carries on and makes comment about the use of the valleys for recreation, agriculture and so forth. The report which I will read to you now deals with the power aspect of the development.

Mr. DAVIS: I should like to ask a question for clarification. Power seems important as long as it is in regard to the waters kept within the Columbia river basin. Are we talking only about the flows of water in the Columbia river basin?

Mr. MACNABB: There are possibilities discussed in respect of diversions of water for irrigation within the Columbia river basin as well. These are set out at page 49 of the presentation paper and have been considered.

Mr. DAVIS: When you said that power was most important you were talking about developments within the basin?

Mr. MACNABB: That is right.

Referring again to this study, it is entitled "Water Power Resources in The Columbia River Basin in Canada Investigations of the Water Resources Branch", and it reads as follows:

The purpose of this report is to provide a very brief resume of the investigations carried out by or for the federal government in connection with its studies of plans for the development of the water resources potential of the Columbia river basin in Canada.

Field Investigations.

The field work for the investigation of possible sites in Canada for the construction of power dams and storage reservoirs on the Columbia river and its tributaries was initiated in 1945. In the course of that work more than 20 locations for projects were examined on the main stem of the Columbia river in Canada and over 10 locations in the Kootenay river basin. Studies were also carried out to assess the water resource potential of the Pend d'Oreille river and many of the smaller tributaries such as the Okanagan—Similkameen, Kettle, Incomappleaux, Beaton, Lardeau, Duncan and Goldstream rivers. Possibilities of sub-basin and trans-basin diversions were also investigated to provide a comprehensive basis for a preliminary evaluation of the hydro resources of the Canadian Columbia river basin. The sites studied in this programme of investigation are shown on Plate 1.

That plate is the next page of the report.

To continue reading the report:

Aerial photographs were taken of the entire basin to assist in preliminary studies and the planning of site locations and reservoir areas. Topographical, bathymetric, geodetic and geological mapping of the reservoir and site areas were carried out by various agencies of the federal government, including: the Department of Northern Affairs and National Resources; Mines and Technical Surveys; and Public Works.

The Water Resources Branch utilized over 200 drill holes in the preliminary examination of subsurface conditions at damsites. This examination was supplemented by a fairly extensive programme of seismic exploration. In addition, surveys were made in the vicinity of the more favourable sites to locate sources of construction materials

such as concrete aggregates and various types of earthfill materials. Laboratory analyses were made of soil samples from many of the site areas.

A network of stream gauging stations and groundwater wells was established to provide data on water supply. Soil surveys were carried out in the basins of the Upper Columbia and Kootenay rivers to determine irrigable acreages.

Preliminary surveys were made to estimate the costs involved in land acquisition, clearing of reservoir areas, relocations of railways, highways, secondary roads, communities and other dislocations connected with the various projects.

Lists of the sites investigated and reports prepared in connection with the field investigation are given in Appendix 1 of this paper.

I must apologize for the fact that we only have two complete sets of the appendices, but I will leave these with the clerk. There are a total of five appendices which go with it.

Office Studies: As the field investigations progressed, office studies were undertaken by the water resources branch and its engineering consultants to determine the more favourable combinations of projects which could provide the best use of the power resource of the Upper Columbia river basin in the national interest of Canada.

Mr. TURNER: Mr. Chairman, I wonder whether it is necessary for the witness to proceed to read the entire report, if that is his intention. Perhaps the committee might consider the feasibility of making this report part of the record, or perhaps allow it to stay overnight in the hands of the members of the committee.

The CHAIRMAN: Is that agreeable?

It is agreed to make the report part of the record.

Mr. MARTIN (*Essex East*): May I ask Mr. Turner the following question because I have to consider my timetable? Do I understand that tomorrow you will go on to deal with Mr. MacNabb's report?

Mr. TURNER: Yes.

Mr. HERRIDGE: Mr. Chairman, on page 3 of the report it says:

Preliminary surveys were made to estimate the costs involved in land acquisition, clearing of reservoir areas, relocations of railways, highways, secondary roads, communities and other dislocations connected with the various projects.

Has Mr. MacNabb any figures which he could give the committee of the various costs?

Mr. MACNABB: We have reports on the investigations we did in each reservoir area. We only have the one copy, but we can bring them in and you could look at them.

Mr. HERRIDGE: Can we get them on the record tomorrow?

Mr. MACNABB: We have them here now.

Mr. HERRIDGE: We want them on the record of this committee.

Mr. MACNABB: They are very extensive.

Mr. HERRIDGE: Surely there must be total figures for these various items.

Mr. MACNABB: These were carried out in 1957 to 1958 and they are the basis for the costs used by the international Columbia river engineering board.

Mr. HERRIDGE: Will we be able to get those figures into the record tomorrow?

The CHAIRMAN: Did you say into the record?

Mr. HERRIDGE: Yes, into our records.

Mr. MARTIN (*Essex East*): It would be useful to bring them into the record so as to see the thoroughness of the work.

Mr. FLEMING (*Okanagan-Revelstoke*): The totals could be placed on the record.

Mr. HERRIDGE: Yes, the totals. I am interested in these figures.

Mr. MACNABB: We also have, if you like, a complete album in the case of the Arrow lakes reservoir and every building that would be affected by the reservoir. They were collected in 1957-58 and are contained in six volumes.

Mr. HERRIDGE: Does this mean there has been a survey of the value?

Mr. MACNABB: Yes.

Mr. MARTIN (*Essex East*): You have to go through all these documents tonight, Mr. Herridge.

Mr. HERRIDGE: I know a number of people to whom no one came to evaluate the properties. We have had a few lads running around on their summer holidays.

Mr. FLEMING (*Okanagan-Revelstoke*): There is one question I wanted to ask Mr. Martin for clarification; it may have come up during the last two days of testimony but I missed it. In Article XIII, section 2 there is reference to diversion from the Kootenay river to the headwaters of the Columbia river and again, the same thing occurs in subsequent paragraphs. The diversion referred to is always from the Kootenay to the headwaters of the Columbia; whereas all of this morning and for some considerable time we have been discussing diversion from one basin to another. Is that covered by section 6 of article XIII, that is diversion of one basin into another basin?

Mr. MARTIN (*Essex East*): It is covered by article XIII 1. Paragraph 1 is general while paragraphs 2, 3 and 4 are limited to the Kootenay, and so is paragraph 5.

Mr. FLEMING (*Okanagan-Revelstoke*): Paragraph 6 also seems to cover variation.

Mr. MARTIN (*Essex East*): Paragraph 6 deals with the Kootenay, while paragraph 1 is the general one. Could I make one comment at this point. It should be clear that the federal government is not responsible for the evaluations; that is clear. We did not conduct them.

Mr. MACNABB: Not the recent one, sir. We did conduct the ones in the 1950's.

Mr. HERRIDGE: That is the figure we would like to have, the one for which the federal government is responsible.

Mr. MACNABB: You mean the ones that the ICREB used in its report to the International Joint Commission?

Mr. MARTIN (*Essex East*): There have been other evaluations made since then by the province and they will be equally authentic.

Mr. LEBOE: The question I wish to raise at this particular moment came to my mind right now but I think it is important just the same. I would draw the attention of the committee to the Pend d'Oreille river which develops at this particular moment I believe some 480,000 horsepower at Waneta No. 1 and I believe Waneta No. 2 is capable of producing a similar amount of electrical power. This river flows from the United States into Canada and dumps into the Columbia just north of the border. I think it is important to remember that the downstream benefits accrue to Canada at this moment without any

cost to Canada. When we are looking at the whole proposition of the development of the Columbia it seems to me the committee must be made aware of the fact that this is a process of negotiation. I think our friends from Alberta could say something about the Milk river in the province of Alberta. I think these things should be made clear when the committee gives consideration to the proposal concerning the Columbia river.

Mr. MARTIN (*Essex East*): I think this is a very important observation.

Mr. TURNER: This morning flattering comments in respect of Mr. MacNabb by the Secretary of State for External Affairs might have given some members the impression that Mr. MacNabb is the only engineer representing the Canadian government in respect of the treaty and the studies that preceded the treaty. I would like to ask him who the other engineers were and what other engineering firms cooperated or presented the Canadian government or the British Columbia government with the engineering data backing up the treaty.

Mr. MACNABB: These investigations have stretched out over 20 years. I have been personally involved for 10 years. I am sure that if I start naming individuals I am going to miss a lot of people who have contributed a great deal to this.

Mr. TURNER: Presumably you have engineers of the water resources branch of the Department of Northern Affairs and National Resources.

Mr. MACNABB: That is true. Starting with the international Columbia river engineering board which reported to the International Joint Commission, the membership on this board changed several times during the 15 years in which they were studying the problem. When they reported to the commission in 1959 the membership was made up of Mr. J. D. McLeod, chief engineer of the water resources branch, Mr. C. K. Hurst who is from the Department of Public Works, Mr. P. R. Purcell who is now the chief engineer of the British Columbia engineering board.

Under the members they had an engineering committee made up of Mr. H. Ramsden, our water resources branch district engineer in Vancouver; Mr. A. W. Walkley, Department of Public Works, Vancouver; Mr. E. W. Bassett, deputy minister of the British Columbia department of lands, who was one of the treaty negotiators. Again, under that committee there was a work group; there always has to be a work group. This consisted of Mr. A. Webster, Department of Public Works; Mr. J. M. Wallace, water resources branch, Vancouver; Mr. G. J. A. Kidd, deputy controller of water rights in British Columbia, who is here today; Mr. B. E. Russell, water resources branch. The people who carried out the actual system studies, the sequence studies for VII, VIII and IX (a), were myself, Mr. Fisher and Mr. White of the water resources branch.

Mr. TURNER: Did any of the engineers of the Columbia river engineering board participate with the Canadian negotiating team with the United States?

Mr. MACNABB: Of the list I have just named, 10 out of 13 were indirectly or directly available to the Canadian negotiators and some of them also assisted the International Joint Commission when they negotiated the principles for the division of the downstream benefits.

Mr. TURNER: There was a statement made before the standing committee of external affairs on Wednesday, March 23, 1960, having to do with the engineers of the Columbia river engineering board. I want to read it and ask you whether the engineers referred to were also part of the research team of the negotiating team for the Canadian government. The statement is found on page 205 of the proceedings.

The international Columbia river engineering board was told to take the various arrays of projects which have been agreed on for study

in the commission—which are designated in these reports as sequence VII, VIII and IX respectively—with the question of with and without High Arrow added on to each of the alternatives as well. After a very, very careful consideration by gentlemen whom we regard as the best experts in the North American continent on these matters, they laid down a common basis for setting up the benefit-cost ratios of all the individual projects in the system—and that has been done.

Then they refer to research, information and negotiation of this treaty on behalf of Canada.

Mr. MACNABB: The men referred to made up the Columbia river engineering board and the people on that board are the people I have named here. Ten of the 13 people were available to the negotiators, either directly or indirectly, during the treaty negotiations.

Mr. TURNER: For the committee's information, those men referred to as the "best experts on the North American continent" were so qualified by General McNaughton on Wednesday, March 23, 1960, before the standing committee on external affairs.

Mr. MARTIN (*Essex East*): May I supplement this, Mr. Chairman, and say that in addition to the names Mr. MacNabb has mentioned, of course we have the advantage of the report of the following very outstanding people, and in some cases engineering authorities of world repute: Crippen-Wright Engineering Limited; the Montreal Engineering Company; the report of Sir Alexander Gibb and Partners and Merz and McLellan, whose services were made available to the British Columbia energy board; and the British Columbia Engineering Company Limited. This will be found in the appendix on page six following the table of contents in the white paper tabled in the House of Commons on March 3.

The CHAIRMAN: Mr. Cameron?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, I want to deal with another matter.

Mr. HERRIDGE: I have just one question which arises out of what has just been asked.

When the treaty was signed in 1961 and when the costs were almost guaranteed, why did the officials advising the government, recommending the signing of the treaty, put the cost of High Arrow at \$72 million when it has turned out to be \$129 million? Why did the error come in?

Mr. MACNABB: You may interpret this as an error but I do not think it was, and I think British Columbia witnesses will be able to answer this in detail. One of the large changes has been brought about by construction of the Celgar plant at Castlegar.

Mr. HERRIDGE: That was under construction.

Mr. MACNABB: No, it went into operation in the spring of 1961. Since then new designs have made provision for a lock and there have been new designs of the dam itself, and new estimates of the payment to people who would be dislocated. However, I assure you it is not just the cost of Arrow lakes that has gone up since 1961.

Mr. HERRIDGE: It is a rather excessive increase. The cost-benefit ratio is worked out on that basis.

Mr. MACNABB: We have recently asked the Montreal Engineering Company to take a look at the east Kootenay projects. The Arrow lake project has gone up by \$63 million since the International Columbia Engineering Board project. The cost of east Kootenay, of Dorr diversion and Luxor have gone up by \$62

million since the treaty was entered into. So this increase in cost is not limited to the one project.

Mr. HERRIDGE: Is that likely to be a future experience with other dams?

Mr. MACNABB: I am sure that dams that will be built 10 years from now will cost more than they would if we went ahead and built them now.

The CHAIRMAN: Mr. Martin says his rent in Ottawa went up!

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I would like to ask Mr. Martin some questions on payment schedules which I do not quite understand.

On page 174 of the green book there is a section headed "Present Worth and the Time Factor", in which it is pointed out that,

The sale arrangement will provide for the United States buyer to receive amounts of power as it is produced downstream over a period of 30 years. Such a sales contract could involve a series of annual cash payments for the power sold each year. Instead, British Columbia preferred to receive a single lump sum in advance equivalent in value to such future payments. This arrangement has been agreed to.

Was this agreed to, Mr. Martin, by the association of purchasing utilities in the United States?

Mr. MARTIN (*Essex East*): This was agreed to by the United States negotiating team.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): They agreed that they would pay the lump sum?

Mr. MARTIN (*Essex East*): They are not going to pay it but this is their agreement with us and now they have set up an authority to go out and raise this money because the purchaser is a private purchaser.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes, I know.

Then on page 175 one sees section (e), "The inclusion of the flood control payments".

Mr. MARTIN (*Essex East*): I should just add that at one stage, in the latter part of the negotiations stage, there was a representative of the purchasers present but that person was not a party to the negotiations of the treaty and the protocol. This was a negotiation between governments.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): They have undertaken to make the lump sum provided?

Mr. MARTIN (*Essex East*): Yes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): In section (e) you point out that,

In Canada, a single agency in British Columbia will receive the entire amounts paid in return for its service of operating the treaty storages in Canada. From the Canadian point of view it is thus reasonable to consider the payment as a whole.

This means it is going to be a single payment from the United States government plus the association of purchasing utilities?

Mr. MARTIN (*Essex East*): No, there is no payment by the United States government at all except the flood control payment.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): That is what I mean.

Mr. MARTIN (*Essex East*): Yes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): In this section you consider the payment as a whole, presumably both sections.

Mr. MARTIN (*Essex East*): The term there is "will receive" in (e) at page 175:

In Canada, a single agency in British Columbia will receive the entire amounts paid . . .

"Will receive" is the term.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): The point I wanted to get clear was that there was no responsibility on the Canadian government to advance this payment to British Columbia before they received it from the United States?

Mr. MARTIN (*Essex East*): Oh no. Canada had to appear in the picture as the only authority that could enter into an engagement with another country.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): There is no undertaking that the Canadian government would underwrite this advance payment?

Mr. MARTIN (*Essex East*): Oh no.

Mr. DAVIS: May I ask the Secretary of State for External Affairs concerning the principles which were laid down by the International Joint Commission which were referred to in the white paper, stating in effect that in order to preserve the sovereignty of each country, the work in each country would be undertaken by entities within that country, and that a United States agency does not build a project in Canada. In the light of that, was the nature of the negotiations such that the price had to do with the cost of the project or with the sale of a service?

Mr. MARTIN (*Essex East*): With the sale of a service.

Mr. DAVIS: In other words, the compensation is for services accruing in the United States, and there was no direct relationship with the cost of a project in Canada.

Mr. MARTIN (*Essex East*): That is right. But naturally in the negotiations we considered a number of factors. I thought you were going to ask about page 105, and I was pointing out to you what you well know, that in the Canada-British Columbia agreement provision is made in the fourteenth article of that agreement for the use of Canadian labour and material to be used in all the construction or operation of dams and so on pursuant to the agreement to the fullest extent procurable. You know that clause, because I think you had something to do with it.

Mr. DAVIS: The compensation for the sale of this service in monetary terms is more than enough to build the projects?

Mr. MARTIN (*Essex East*): Oh yes, there would be a surplus of \$53,000,000.

Mr. DAVIS: Some of this will go for generating on-site power.

Mr. MARTIN (*Essex East*): That surplus will provide for about one half of the cost involved in establishing the generating machinery.

Mr. HERRIDGE: Can you guarantee that?

Mr. MARTIN (*Essex East*): No, I cannot guarantee anything. But the evidence here is based on the most careful calculations. I would not even guarantee that you would not end up as the strongest protagonist of this treaty.

Mr. BREWIN: I would like to ask the Secretary of State for External Affairs one or two questions arising out of his correspondence with General McNaughton. I am looking at his letter to General McNaughton of August 6.

Mr. MARTIN (*Essex East*): Would you mind if I got that correspondence. What page?

Mr. BREWIN: It is close to the beginning. Your letter is August 6; about the third page.

Mr. MARTIN (*Essex East*): Yes, the third page.

Mr. BREWIN: Yes, it is the fourth long paragraph.

Mr. MARTIN (*Essex East*): The third page is a very small one.

Mr. BREWIN: Oh well, it is the fourth page, with a long letter dated August 6, to General McNaughton.

Mr. MARTIN (*Essex East*): My letter?

Mr. BREWIN: Yes.

Mr. MARTIN (*Essex East*): My letter of August 6 is about 2 1/10 pages.

Mr. BREWIN: That is right. That is the one I refer to.

Mr. MARTIN (*Essex East*): Which page?

Mr. BREWIN: The first page.

Mr. MARTIN (*Essex East*): Oh, the first page. I am sorry.

Mr. BREWIN: On the first page there is a long paragraph here.

Mr. MARTIN (*Essex East*): Yes, I put that on the record yesterday.

Mr. BREWIN: Yes, I think you are dealing with General McNaughton's objections to the treaty as it existed before the protocol.

Mr. MARTIN (*Essex East*): You mean with respect to the selection of projects?

Mr. BREWIN: Yes. And perhaps one of the major objectives was that General McNaughton felt that the Bow river Luxor project was preferable to the High Arrow-Libby.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: Then you say:

The problem associated with such a suggested change of projects, aside altogether from the conclusions of engineering firms which support the High Arrow development, is the problem of jurisdiction.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: I continue:

From the records which are available, it would appear that the province of British Columbia, which under the British North America Act has jurisdiction over the water resources of that province, considered the alternatives and then selected the present treaty projects for inclusion in a co-operative plan of development.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: I just pause to say that this is confirmed by what Mr. Harkness said in the house the other day.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: Even though in his view I think he is inclined to agree with General McNaughton.

Mr. MARTIN (*Essex East*): He acknowledged that the flooding under the unaccepted plan would be very much greater, but the yield of power would be very much higher, and the cost of the power would be very much higher.

Mr. BREWIN: I take it that it is a fact that the records show that at a certain stage British Columbia did express quite clearly its preference for the treaty plan.

Mr. MARTIN (*Essex East*): Yes. The position I take in that paragraph is expounded further on in the presentation, as it appears on pages 66 to 68.

Mr. BREWIN: There is something I would like to ask you about. You go on to say that if they had turned it down, it would be worthwhile considering building the thing, and you say:

This would now appear to be the case with the Door, Bull River-Luxor reservoirs and, in the absence of any indication from the province that they are prepared to reconsider their decision, I can see no practical alternative but to accept it.

Mr. MARTIN (*Essex East*): Yes.

Mr. BREWIN: What I wanted to ask you is this; the situation had changed had it not, since the original view of British Columbia? Was any attempt made to discuss whether the province of British Columbia might be prepared to reconsider its position?

Mr. MARTIN (*Essex East*): The situation had not changed. In the circumstances it was not as good an arrangement.

Mr. BREWIN: Was any correspondence had with or any request made to the province of British Columbia to see whether under change of circumstances they might have a different view?

Mr. MARTIN (*Essex East*): I do not know if there was any correspondence, but the consultations between British Columbia and Canada were continuous. I presume there may be correspondence. I had no correspondence with British Columbia. But I had continuous contact and consultation with them directly, myself, and through my officers, some of whom are here today, and some of whom are in British Columbia.

Mr. TURNER: I am advised that the minister has an urgent appointment.

Mr. MARTIN (*Essex East*): Yes, at 5.50 p.m.

Mr. TURNER: Might we not consider adjourning now until tomorrow morning?

Mr. BREWIN: I would be glad to keep my questions until tomorrow. I would prefer you to meet your appointment now and be available at some other time at your convenience.

Mr. KINDT: I also have two or three questions which I shall be glad to hold until tomorrow.

The CHAIRMAN: We shall meet tomorrow morning at nine o'clock sharp. Could it be left that way?

Mr. MARTIN (*Essex East*): I cannot be here at nine, but we could continue with Mr. MacNabb.

Would it be the pleasure of the committee to sit tonight?

Mr. TURNER: It is Montreal versus Toronto tonight!

Mr. MARTIN (*Essex East*): I could be here around nine-thirty a.m.

The CHAIRMAN: Tomorrow will be a short day because of the caucus arrangements. We have only from nine until eleven. Is there any other witness we could carry on with tomorrow? What about Mr. MacNabb? Sharp at nine?

Mr. MARTIN (*Essex East*): Yes, that was the arrangement.

The CHAIRMAN: Unfortunately we must meet in room 112-N tomorrow, and then we shall be back here continuously, we hope, hereafter.

APPENDIX "C"

WATER POWER RESOURCES IN THE COLUMBIA RIVER
BASIN IN CANADA
INVESTIGATIONS OF THE WATER RESOURCES BRANCH
April, 1964.

The purpose of this report is to provide a very brief resumé of the investigations carried out by or for the federal government in connection with its studies of plans for the development of the water resource potential of the Columbia River basin in Canada.

1. *Field Investigations*

The field work for the investigation of possible sites in Canada for the construction of power dams and storage reservoirs on the Columbia River and its tributaries was initiated in 1945. In the course of that work more than 20 locations for projects were examined on the main stem of the Columbia River in Canada and over 10 locations in the Kootenay River basin. Studies were also carried out to assess the water resource potential of the Pend d'Oreille River and many of the smaller tributaries such as the Okanagan-Similkameen, Kettle, Incomappleaux, Beaton, Lardeau, Duncan, and Goldstream Rivers. Possibilities of sub-basin and trans-basin diversions were also investigated to provide a comprehensive basis for a preliminary evaluation of the hydro resources of the Canadian Columbia River basin. The sites studied in this programme of investigation are shown on Plate 1.

Aerial photographs were taken of the entire basin to assist in preliminary studies and the planning of site locations and reservoir areas. Topographical, bathymetric, geodetic and geological mapping of the reservoir and site areas were carried out by various agencies of the federal government, including: the Departments of Northern Affairs and National Resources; Mines and Technical Surveys; and Public Works.

The Water Resources Branch utilized over 200 drill holes in the preliminary examination of subsurface conditions at damsites. This examination was supplemented by a fairly extensive programme of seismic exploration. In addition, surveys were made in the vicinity of the more favourable sites to locate sources of construction materials such as concrete aggregates and various types of earthfill materials. Laboratory analyses were made of soil samples from many of the site areas.

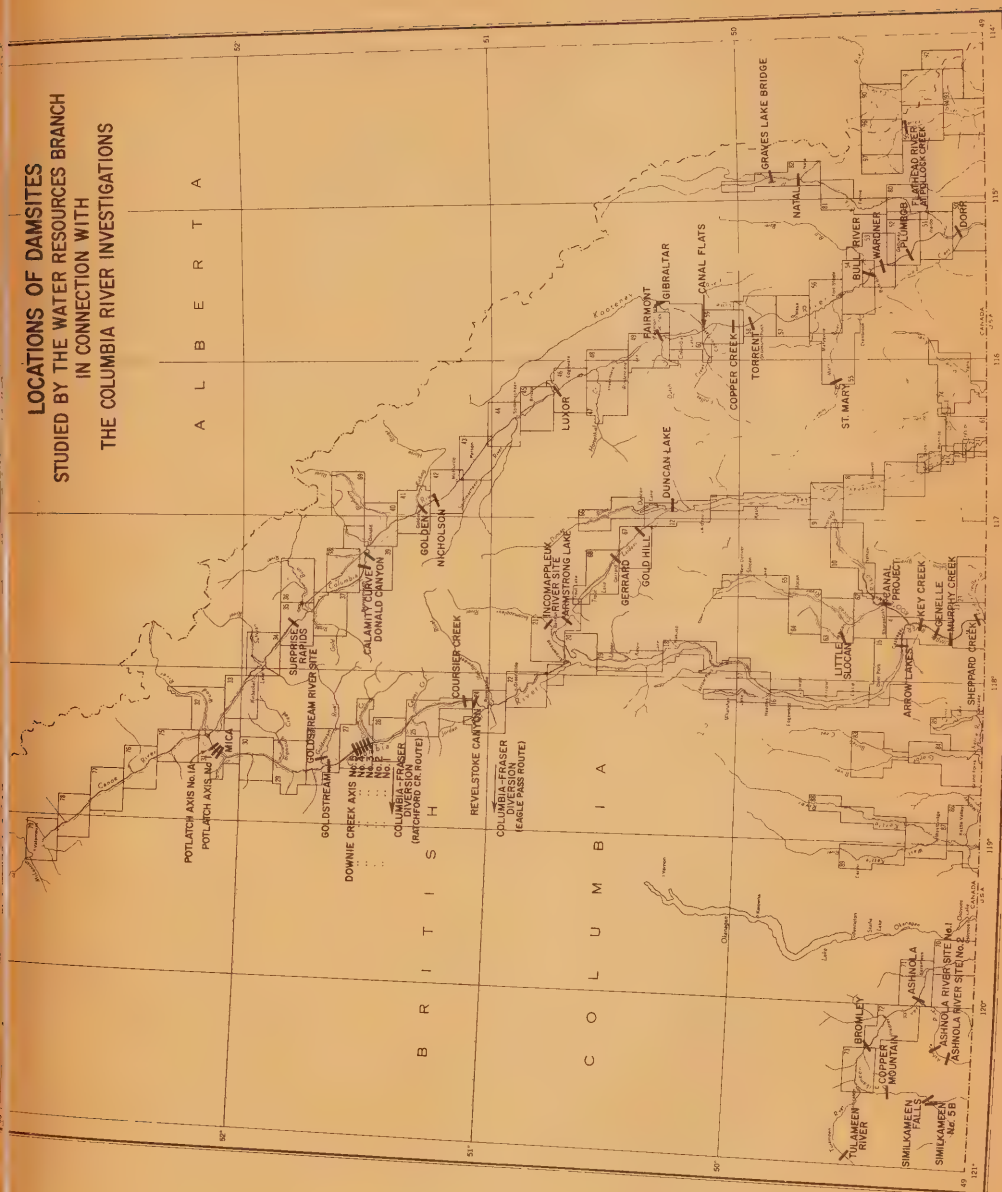
A network of stream gauging stations and groundwater wells was established to provide data on the water supply. Soil surveys were carried out in the basins of the Upper Columbia and Kootenay Rivers to determine irrigable acreages. Preliminary surveys were made to estimate the costs involved in land acquisition, clearing of reservoir areas, relocations of railways, highways, secondary roads, communities and other dislocations connected with the various projects.

Lists of the sites investigated and reports prepared in connection with the field investigation are given in Appendix 1 of this paper.

2. *Office Studies*

As the field investigations progressed, office studies were undertaken by the Water Resources Branch and its engineering consultants to determine the more favourable combinations of projects which could provide the best use

LOCATIONS OF DAMSITES
STUDIED BY THE WATER RESOURCES BRANCH
IN CONNECTION WITH
THE COLUMBIA RIVER INVESTIGATIONS



of the power resource of the Upper Columbia River basin in the national interest of Canada.

At the same time, through the International Columbia River Engineering Board, the federal government also participated in studies of plans for optimum development of the water resource of the Columbia River basin without regard to the International Boundary.

These studies, from both the national and international viewpoint, concentrated on the development of the river basin for power, not only because of the complexity of this aspect of the problem, but also because the development of power appeared as the largest and most valuable benefit from the resource. Although the emphasis in the studies was on the power aspect, the studies of the reservoir areas involved consideration of the effect of the various proposals on the use of the river valleys for irrigation, agriculture, forestry, mining, manufacturing, fish and wildlife, recreation, and transportation.

The results of the international studies are presented in the 1959 Report by the International Columbia River Engineering Board to the International Joint Commission and need not be elaborated on in this paper. This paper concerns itself mainly with the findings of the studies related to strictly independent development in the Canadian portion of the basin as a sound knowledge of the best independent development programme is essential before the results of an international development can be properly evaluated.

3. System Regulation Studies

The system power studies carried out by the Water Resources Branch in the selection of projects and evaluation of plans for the development of the Columbia River basin independently by Canada can be divided into four separate groups.

- (1) The preliminary studies forming the first group consist of power output studies of periods of critical streamflow and were made to evaluate and select the most desirable projects for inclusion in the several alternative hydroelectric development plans.
- (2) The second or comparative group of studies include complete 20-year regulations of streamflow and were made to provide power output data for economic comparison of the several alternative plans.
- (3) The third group of studies were made to evaluate the downstream power benefits in the United States resulting from Canadian storages operated for maximum Canadian at-site generation. This group of studies provided data for an assessment of downstream power benefits in a situation with no co-ordination of the Canadian system with United States plants, as well as the additional benefits possible from co-ordinated Canadian-United States operation.
- (4) The fourth group of studies were made to assess the economics of diverting water from the Columbia River basin into the Fraser River basin for the development of hydro-electric power.

The results of the more recent power studies are summarized in Appendix 2. The earlier power studies made on the basis of very tentative flow and project data have not been included in these summaries. Project and storage data used in the more recent power studies are given in Appendix 3. Detailed 20-year regulation studies of the several alternative plans for independent Canadian development are given in Appendix 4 and details of 30-year studies of two of the systems are given in Appendix 5.

4. *Project Cost Estimates*

Preliminary cost estimates used in economic evaluations were made by the Water Resources Branch and its engineering consultants. These estimates were based on preliminary designs of dams, reservoirs, power plants, diversion works, and transmission grids. In preparing the preliminary designs of projects, standard layouts and construction methods were followed as much as possible. Consideration was given to the topographical, geological, and hydro-meteorological conditions in the proposed areas of development, and also to the requirements for flexibility in co-ordinated and integrated system operation. Certain aspects of the work carried out in this connection were incorporated into the 1959 Report of the International Columbia River Engineering Board to the International Joint Commission.

The engineering consultants included: Montreal Engineering Co. Ltd.; H. G. Acres & Co. Ltd.; and B.C. Engineering Co. Ltd. A list of the reports prepared by these consulting firms on behalf of the Department of Northern Affairs and National Resources is given in Appendix 1.

5. *Preliminary Project Evaluation*

The projects included in the several alternative plans studied by the Water Resources Branch were selected from among the many possibilities located on the Columbia River, Kootenay River, Duncan River, and the Pend d'Oreille River. Projects on the minor tributaries such as the Similkameen and Goldstream Rivers and Trout Lake were excluded from consideration because their contributions to system development would be relatively small and would not significantly effect the results of any of the system studies carried out for the purpose of selecting a plan of optimum development.

In addition, consideration was given to trans-basin diversion of water from the Columbia River basin to the Fraser River basin, which included investigations not only of routes for accomplishing the diversion but also of the potential development sites on the Fraser River system itself.

(a) *Main Stem of the Columbia River*

Through the process of assessment and comparison, some of the less attractive sites on the main stem of the Columbia River such as Fairmont, Nicholson, Potlatch, Coursier Creek and Shepherd Creek were eliminated from further consideration in system planning. As the investigations of the Water Resources Branch continued, it became apparent that the more promising sites on the main stem were located at Luxor, Calamity Curve, Surprise Rapids, Mica Creek, Downie Creek, Revelstoke Canyon and Murphy Creek. Together, projects at these sites could develop almost 90 percent of the total head of 1350 feet available between the headwaters at Columbia Lake and the International Boundary. A further 44 feet of head could be developed by a dam at the outlet of Arrow Lakes, but it was apparent even in these early studies by both government and consulting engineering firms that the great value of the Arrow Lakes site was the important role it could play in a plan of co-operative river development with the United States and particularly in promoting the effective use of Canadian storage farther upstream for production of power in Canada within such a co-operative arrangement.

(b) *Kootenay River (West Kootenay Reach)*

The river downstream from Kootenay Lake is already developed by five hydro-electric plants (six including the 8,760 kilowatt City of Nelson plant) which supply power for the industrial complex in the Trail and Kimberley areas. Storage for the Kootenay River plants is provided on Kootenay Lake

and regulated under an International Joint Commission Order. However, storage provided in Kootenay Lake under the I.J.C. order is not sufficient to obtain the desirable degree of flow regulation for the operation of these power plants. Additional storage at the Duncan Lake site on the Duncan River could probably be developed to advantage in effecting improvement in the West Kootenay flows.

The proposed Libby project on the Kootenai River in the United States would contain about 5,000,000 acre-feet of usable storage. The regulation available from such a development would not only benefit the existing plants on the West Kootenay in Canada, but also could justify the construction of a new plant on that reach of the river in Canada. This new "Kootenay Canal Plant" would utilize by means of a by-pass canal, the head between the forebays of the existing Corra Linn and Brilliant Plants. These and other plants are shown on Plate 2. Although the Libby project was authorized in the United States by the 1950 Flood Control Act of the U.S. Congress, the construction of this project would require agreement by Canada as the proposed reservoir would flood about 42 miles into Canada.

(c) *Kootenay River (East Kootenay Reach)*

In the investigation of the East Kootenay reach in Canada, it was soon evident that construction of dams of even moderate height at any of the sites on the Kootenay River such as Door, Plumbob, Wardner, Bull River, Torrent, or Copper Creek would be expensive because these sites are all located in a wide valley with great depth of overburden along the valley floor. Cost of flooding the valley would also be high, involving relocations of railways, highways, and many settlements as well as the loss of agricultural land. The financial returns from power generated at-site at these projects would not be sufficient to offset the high cost of development in this reach of the river (See Table 1).

It became apparent however, that Canada could use the water resources of the Upper Kootenay to greater advantage by diversion of Kootenay water into the Columbia River across the low divide at Canal Flats. In this way, it would be possible to use the Kootenay water through a much greater total head on the Canadian Columbia than is available on the Canadian Kootenay itself. Such diversions of the Kootenay would reduce the flow of water to the Cominco plants in the lower Kootenay where a total of 375 feet of head has already been developed. Thus, large scale diversion of water from the Kootenay to the Columbia would be attractive only when hydro-electric developments on the Canadian Columbia have been advanced to the stage where they offered a considerable advantage in developed head over that available on the Kootenay itself.

(d) *Kootenay River Diversion to the Columbia River*

The physical possibility of diverting the Kootenay River to the Columbia River permits considerable scope in planning for such a development. As a result of studies by the Water Resources Branch, it was determined that the diversion could be accomplished by projects located on the Kootenay River at either Canal Flats, Copper Creek, or Bull River and Dorr. Depending upon the degree of diversion that would be economically desirable, the amount of water diverted annually could vary from about 1.5 million acre-feet with the diversion structure located at Canal Flats, to about 6,000,000 acre-feet with diversion structures located at Bull River and Dorr. The latter would amount virtually to almost complete diversion of the upper Kootenay River in Canada.

PLATE 2



TABLE 1
EAST KOOTENAY PROJECTS
AT-SITE POWER COSTS
(No Division of The Kootenay River)

| Project | Full Supply Level | Usable Storage | Installed Capacity | Project Cost | | Average Energy Output | At-Site Energy Cost |
|---|-------------------|----------------|--------------------|--------------|---------|-----------------------|---------------------|
| | | | | Capital | Annual | | |
| | Feet | MAF | MW | \$1,000 | \$1,000 | MW-Yr | Mills/Kwh |
| 1. Bull River-Dorr Combination¹ | | | | | | | |
| (a) Bull River..... | 2,660 | 3,980 | 201 | 114,980 | 7,411 | 50 | |
| (b) Dorr..... | 2,513 | 1,031 | 132 | 63,565 | 4,264 | 66 | |
| Total..... | | 5,011 | 333 | 178,545 | 11,675 | 116 | 11.5 |
| 2. Medium Dorr¹ | | | | | | | |
| | 2,624 | 5,014 | 324 | 178,801 | 11,458 | 134 | 9.8 |
| 3. Bull River¹ | | | | | | | |
| | 2,660 | 2,794 | 134 | 86,913 | 5,609 | 67 | 9.6 |

¹ Estimates by Water Resources Branch.
² I.C.R.E.B. estimates with cost adjusted to 5½% interest rate.

A series of studies, summarized in Table 2, was carried out by the Water Resources Branch to assess the economic desirability of the various schemes for Kootenay diversion. Since the Mica, Downie and Revelstoke projects develop most of the available head of the Columbia River in Canada, their use in the studies as a means of measuring increased power generation by the diverted waters was considered valid, particularly for comparing one diversion scheme with another.

From the economic evaluation given in Table 2, it would appear that diversion with a structure located at Canal Flats is the most favourable scheme. Although diversion at either Copper Creek or Bull River would produce a larger amount of firm energy at Canadian plants, the incremental output over the Canal Flats diversion scheme would not be at all competitive with energy from other sources, particularly when transmission costs to load centres are taken into consideration.

(e) *Pend d'Oreille River*

Of the total drop of about 410 feet available on the Pend d'Oreille River in Canada, about 210 feet of head have already been developed at the Cominco Waneta Plant. The remaining undeveloped head could be fully utilized at the Seven Mile site.

No significant amount of storage would be available in the proposed Seven Mile reservoir for the regulation of river flows. Canadian generation on this river, therefore, depends considerably on upstream releases from United States reservoirs on the Pend d'Oreille. As releases from those reservoirs are not planned with the operation of the Canadian plants in mind, the most effective operation of those plants will require co-ordination with either the United States generating system or the Canadian system as it develops.

(f) *Columbia River diversion to the Fraser River system*

Studies of plans for diverting water from the Columbia River basin to the Fraser River system were undertaken for the federal government by the B.C. Engineering Company in 1956. The results of the studies indicated that the Columbia diversion to the Fraser could produce an incremental energy output of 17.3 billion kwh annually in the Fraser River system at a cost of 7.1 mills per kwh delivered at Vancouver, British Columbia. The figures quoted do not include the costs of the necessary dams on the Columbia River, nor do they take into consideration the adverse effect of diversion on existing and potential developments on the Columbia River system itself.

Therefore, it would appear that the economic advantage of such a diversion would not be sufficiently attractive to recommend it for inclusion in any plan for optimum development of the hydro resources of the Columbia River basin in Canada. It must also be recognized that the many political, legal, fisheries and other technical problems associated with such a diversion would render the proposal unrealistic.

6. *Alternative Plans For Independent Canadian Development*

(a) *General Description*

Preliminary evaluations of large scale development possibilities of the Columbia River in Canada indicated the need for the benefits of co-operative development with the United States to make any programme a truly profitable venture for Canada.¹

¹ See Report of Montreal Engineering Company Ltd. to the Department of Northern Affairs and National Resources, November 1957.

TABLE 2

SUMMARY OF SELECTED SYSTEM STUDIES OF DEVELOPMENT OF THE COLUMBIA R. BASIN IN CANADA

| CANAL FLATS DIVERSION PLANS | | | | | | | | | | | | | COPPER CREEK | | BULL RIVER | | | |
|---------------------------------|------------------------------|-----------|----------------------------------|-----------|------------------------------|-----------|-----------------------------------|-----------|---------------------------------------|-----------|---------------------------------------|-----------|---------------------------------------|-----------|---------------------------------------|-----------|---------------------------------------|--|
| PLAN NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | |
| PROJECTS INCLUDED IN PLANS | NICOLSON DOWNSIDE REVELSTONE | | LOW CALAMITY DOWNSIDE REVELSTONE | | NICOLSON DOWNSIDE REVELSTONE | | HIGH CALAMITY DOWNSIDE REVELSTONE | | CANAL FLATS MICA, DOWNSIDE REVELSTONE | | CANAL FLATS MICA, DOWNSIDE REVELSTONE | | CANAL FLATS MICA, DOWNSIDE REVELSTONE | | CANAL FLATS MICA, DOWNSIDE REVELSTONE | | CANAL FLATS MICA, DOWNSIDE REVELSTONE | |
| | 3/OC | 4/OC-1 | 5/OC | 6/OC-1 | 7/11b | 25/2a | 28/2b | 26/2b-1 | 30/2b-1 | 27/2b | 48/4b | 56/5b | 68/6b | 70/7b | 72/7b | 74/7b | 76/7b | |
| W.R.B. POWER OUTPUT STUDY NO. | | | | | | | | | | | | | | | | | | |
| CANAL FLATS | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| HIGH CALAMITY | | | | | | | | | | | | | | | | | | |
| NICOLSON | | | | | | | | | | | | | | | | | | |
| LOW CALAMITY | | | | | | | | | | | | | | | | | | |
| MICA | 880 | 2,422 | 1,600 | 860 | 21,422 | 1,820 | 860 | 21,422 | 1,820 | 860 | 21,422 | 1,820 | 860 | 21,422 | 1,820 | 860 | 21,422 | |
| DOWNSIDE | 675 | 1,000 | 42 | 675 | 1,000 | 42 | 675 | 1,000 | 42 | 675 | 1,000 | 42 | 675 | 1,000 | 42 | 675 | 1,000 | |
| REVELSTONE | 650 | 2,411 | 200 | 650 | 2,411 | 200 | 650 | 2,411 | 200 | 650 | 2,411 | 200 | 650 | 2,411 | 200 | 650 | 2,411 | |
| COPPER CREEK - LUPINE | | | | | | | | | | | | | | | | | | |
| BULL RIVER - LUPINE | | | | | | | | | | | | | | | | | | |
| TOTAL UNPAID CANNERY | 1,915 | 1,915 | 2,015 | 2,115 | 2,115 | 2,215 | 2,315 | 2,415 | 2,515 | 2,615 | 2,715 | 2,815 | 2,915 | 3,015 | 3,115 | 3,215 | 3,315 | |
| TOTAL ANNUAL COST | \$ 12,700 | \$ 15,900 | \$ 16,400 | \$ 16,900 | \$ 17,400 | \$ 17,900 | \$ 18,400 | \$ 18,900 | \$ 19,400 | \$ 19,900 | \$ 20,400 | \$ 20,900 | \$ 21,400 | \$ 21,900 | \$ 22,400 | \$ 22,900 | \$ 23,400 | |
| TOTAL FIRM BUREAU OUTPUT | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | |
| REDUCTION IN FIRM BUREAU OUTPUT | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | |
| NET TOTAL FIRM BUREAU OUTPUT | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | 1,431 | |
| UNIT COST / HOUR OF FIRM BUREAU | 2.63 | 2.94 | 2.80 | 3.13 | 3.22 | 2.58 | 2.12 | 2.81 | 2.93 | 2.94 | 2.95 | 3.01 | 3.02 | 3.03 | 3.04 | 3.05 | 3.06 | |

NOTE
LAST SUMMITTER RECEIVED FROM REPORT ON THE DEVELOPMENT OF CANADA'S WATER POWER RESOURCES IN THE COLUMBIA RIVER BASIN, MONTANA-INDIAN RESERVE, CANADA, 1951
DOWNSIDE, BRITISH COLUMBIA, DEPT OF NATURAL RESOURCES
DOWNSIDE, BRITISH COLUMBIA, DEPT OF NATURAL RESOURCES

| | |
|--|---|
| <p>I Commercial or Domestic Plants on the Right are recommended.</p> <p>Copy to Seedling, with Cash, Plant, and Plant No. 6</p> | |
| <p>Incandescent neon Diodes PLANT No 12</p> | |
| 12-B | <p>Cost Incandescent $\frac{4.00}{\text{unit}}$</p> <p>Cost Diodes $\frac{2.00}{\text{unit}}$</p> <p>Cost Diodes $\frac{2.00}{\text{unit}}$</p> <p>Cost Diodes $\frac{2.00}{\text{unit}}$</p> |
| <p>Incandescent neon Diodes PLANT No 11</p> | |
| 11-B | <p>Cost Incandescent $\frac{4.00}{\text{unit}}$</p> <p>Cost Diodes $\frac{2.00}{\text{unit}}$</p> <p>Cost Diodes $\frac{2.00}{\text{unit}}$</p> <p>Cost Diodes $\frac{2.00}{\text{unit}}$</p> |

[illegible]

However, before entering into any international agreement, it was necessary to ensure that the alternatives or "best uses" of the river in the national interest of Canada were not lost sight of when considering the international advantage. Accordingly, detailed studies were undertaken to examine four alternative plans for independent Canadian development, in which the elements of each plan were assumed to be integrated and co-ordinated to provide maximum power generation in Canada without regard to possible downstream benefits in the United States.

The detailed studies consisted essentially of review and re-analysis of various Kootenay diversion proposals to take into consideration the possible advantage to Canada of the Libby project proposed by the United States. It was recognized that if a favourable agreement were reached whereby the United States would assume the major share of the cost of construction of the Libby project, Canada could obtain very low cost power benefits downstream in Canada on the West Kootenay reach.

The four plans have been designated as (1) Non-Diversion Plan, (2) Canal Flats Diversion Plan, (3) Copper Creek Diversion Plan, and (4) Dorr-Bull River Diversion Plan.

The Non-Diversion Plan and the limited diversion schemes of the Canal Flats and Copper Creek plans assume the existence and operation of the Libby project and thus facilitate the economic development of the Kootenay Canal Plant in Canada. On the other hand, the Dorr-Bull River Diversion Plan would divert almost the entire flow of the Kootenay River above the International Boundary near Dorr and would preclude the construction of the Libby project in the United States.

The Mica Creek, Downie Creek, Revelstoke Canyon and Murphy Creek projects on the main stem of Columbia, and the Seven Mile project on the Pend d'Oreille River were included in all four plans. Comparisons of the four plans are given on Tables 3 and 4, and pertinent data relating to the various schemes are tabulated on Table 5.

(b) *Comparison of Plans*

The findings of these studies demonstrate conclusively that limited diversion of the Kootenay River by means of a relatively inexpensive structure at Canal Flats would provide the lowest cost power of any of the plans for independent development of the river basin in Canada for power purposes, without regard to downstream power benefits in the United States.

Earlier studies have already shown that limited diversion of the Kootenay River by a structure at Canal Flats would produce an attractive low-cost increment of power on the main stem of the Columbia River. With limited diversion, the construction of Libby by the United States would still be possible, and if constructed at little or no expense to Canada, could provide a further increment of low-cost power benefits in Canada at the Kootenay Canal Plant. Such benefits would make it increasingly difficult to support full diversion of the Kootenay River in Canada.

While the plan of best use based on Canal Flats diversion would, at its ultimate stage of development, produce somewhat less power in Canada than a maximum diversion plan, the last-added increment of energy available from maximum diversion would not appear to be competitive with alternative sources of energy.

The conclusion favouring only a limited diversion of the Kootenay River has been supported by studies carried out independently by Canadian consulting engineering firms. In the November 1957 report of the Montreal Engineering Company, the Canal Flats diversion project was included in the plan it recommended for independent development by Canada. In 1959, the firm of

TABLE 3
COMPARISON OF DEVELOPMENT PLANS FOR INDEPENDENT CANADIAN SYSTEM OPERATION
Based on 20-Year Output Studies (1928-48)

| Development Plan | Annual Firm Energy ¹ | | | | Annual Cost | | | Energy | |
|--|---------------------------------|---------------------------------|--------------------------------------|------------------------------------|------------------------------|-----------------------------------|------------------------------|-------------------------|-----------------|
| | Firm Hydro Energy At-Site | Firm Hydro Energy At-Load | Firm Thermal Energy At-Load | Total Firm Energy At-Load | At-Site Cost ² | Transmission Cost ³ | Thermal Cost ⁴ | Total Annual Cost | Cost At-Load |
| | MKwh | MKwh | MKwh | MKwh | \$1,000 | \$1,000 | \$1,000 | \$1,000 | Mills/Kwh |
| Non Diversion..... (Study No. 24/1) | 20,411 | 19,186 | 3,458 | 22,644 | 57,094 | 28,779 | 17,290 | 103,163 | 4.56 |
| Canal Flats Diversion..... (Study No. 43/2) | 20,980 | 19,721 | 2,923 | 22,644 | 57,444 | 29,581 | 14,615 | 101,640 | 4.49 |
| Copper Creek Diversion..... (Study No. 51/3) | 22,610 | 21,253 | 1,391 | 22,644 | 64,069 | 31,880 | 6,955 | 102,904 | 4.54 |
| Dorr-Bull River Diversion..... (Study No. 61/6) | 24,900 | 22,644 | 0 | 22,644 | 70,222 | 33,966 | 0 | 104,188 | 4.60 |

¹ Energy outputs from Water Resources Branch power output studies

² At-site cost derived from I.C.R.E.B. estimates and adjusted to 5½% interest rate

³ Average system cost for transmission assumed at 1.5 mills/Kwh of energy delivered at Vancouver

⁴ Based on capacity factor of 65%, capital cost of \$120.00 per kw of installation and fuel cost of 2.7 mills/Kwh

TABLE 4
COMPARISON OF DEVELOPMENT PLANS FOR INDEPENDENT CANADIAN SYSTEM OPERATION
(On the Basis of Firm Energy Output Under 1985 Conditions)

| Development Plan | Increment Over "Non-Diversion Plan" | | | | Increment Over "Canal Flats Diversion Plan" | | | |
|--|-------------------------------------|-----------------------------|-----------------------------------|----------------|---|-----------------------------------|----------------|--------------------|
| | Annual ¹ Cost | Firm ² Energy | Unit Cost of At-Site Energy | Annual Cost | Firm Energy | Unit Cost of At-Site Energy | Annual Cost | Firm Energy |
| | \$1,000 | Millions of kwh | Mills/kwh | \$1,000 | Millions of kwh | Mills/kwh | \$1,000 | Millions of kwh |
| <i>Non-Diversion</i> | | | | | | | | |
| W. R. B. Study No. 1 | 57,094 | 20,411 | 2.80 | — | — | — | — | — |
| <i>Canal Flats Diversion</i> | | | | | | | | |
| W. R. B. Study No. 2 | 57,444 | 20,980 | 2.74 | 350 | 569 | 0.62 | — | — |
| <i>Copper Creek Diversion</i> | | | | | | | | |
| W. R. B. Study No. 4 | 64,069 | 22,610 | 2.83 | 6,975 | 2,199 | 3.17 | 6,625 | 1,630 |
| <i>Dorr-Bull River Diversion</i> | | | | | | | | |
| W. R. B. Study No. 6 | 70,222 | 24,090 | 2.91 | 13,128 | 3,679 | 3.57 | 12,778 | 3,110 |

¹Annual costs derived from I.C.R.E.B. estimates except those for the Canal Flats Diversion Structure and Associated Channel Improvements which were taken from Crippen Wright Engineering Report. All costs adjusted to 5½% interest rate.

²Firm energy outputs based on 20-year Power Studies of the Water Resources Branch.

TABLE 5
SUMMARY OF PERTINENT DATA RELATING TO THE ALTERNATIVE PLANS FOR INDEPENDENT CANADIAN DEVELOPMENT^{1,2}

| Projects | Non-Diversion Plan | | | | Canal Flats Diversion Plan ³ | | | | Copper Cr. Diversion Plan | | | | Dorr-Bull R. Diversion Plan | | | |
|---------------------------------|--------------------|--------------------|---------------------------|--------------------|---|---------------------------|--------------------|-------|---------------------------|---------------------------|--------------------|-------|-----------------------------|---------------------------|--------------------|-------|
| | Usable Storage | Installed Capacity | Incre-mental Annual Costs | Annual Firm Output | Installed Capacity | Incre-mental Annual Costs | Annual Firm Output | MW | Installed Capacity | Incre-mental Annual Costs | Annual Firm Output | MW | Installed Capacity | Incre-mental Annual Costs | Annual Firm Output | Mw-Yr |
| | 1,000 Ac. Ft. | | \$1,000 | Mw-Yr | | \$1,000 | Mw-Yr | | | \$1,000 | Mw-Yr | | | \$1,000 | Mw-Yr | |
| Dorr Power..... | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 7 |
| Dorr Pumping..... | 881 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | —34 |
| Bull River-Luxor..... | 3,996 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Copper Cr.-Luxor..... | 2,275 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Calamity Curve..... | Pondage | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Mica Creek..... | 11,685 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Downie Creek..... | Pondage | 1,276 | 20,868 | 703 | 1,276 | 20,868 | 758 | 1,392 | 120 | 3,646 | 58 | 160 | 160 | 2,782 | 92 | — |
| Revelstoke Canyon..... | Pondage | 1,008 | 9,994 | 445 | 1,008 | 9,994 | 473 | 1,008 | 1,392 | 21,351 | 837 | 1,624 | 1,624 | 22,317 | 1,010 | — |
| Murphy Creek..... | Pondage | 336 | 8,110 | 314 | 336 | 8,110 | 332 | 336 | 696 | 8,592 | 349 | 696 | 1,176 | 11,136 | 572 | — |
| Kootenay River Plants..... | Pondage | 336 | 7,733 | 243 | 336 | 7,733 | 241 | 336 | 336 | 7,733 | 244 | 378 | 378 | 8,235 | 240 | — |
| Waneta-7 Mile..... | Pondage | 540 | 3,024 | 431 | 540 | 3,024 | 397 | 540 | 540 | 3,024 | 390 | 277 | 277 | 8,235 | 245 | — |
| Duncan..... | Pondage | 718 | 5,200 | 540 | 718 | 5,200 | 540 | 718 | 718 | 5,200 | 540 | 718 | 718 | 5,200 | 540 | — |
| Libby Floorage..... | 1,006/1,392 | 0 | 1,615 | 0 | 0 | 1,615 | 0 | 0 | 0 | 1,615 | 0 | 0 | 0 | 1,615 | 0 | — |
| Canal Flats..... | 4,045 | 0 | 550 | 0 | 0 | 550 | 0 | 0 | 0 | 550 | 0 | 0 | 0 | 550 | 0 | — |
| Diversion..... | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Sub-totals..... | — | 4,516 | 57,094 | 2,676 | 4,516 | 57,444 | 2,741 | 4,885 | 4,885 | 64,069 | 2,927 | 5,111 | 5,111 | 70,222 | 3,096 | — |
| Existing Cominco System..... | — | — | — | -346 | — | — | -346 | — | — | — | -346 | — | — | — | -346 | — |
| Net Increase in Firm Energy.... | Mw-Yrs | — | — | 2,330 | — | — | 2,395 | — | — | — | 2,581 | — | — | — | 2,750 | — |
| | MKwh | — | — | 20,411 | — | — | 20,980 | — | — | — | 22,610 | — | — | — | 24,090 | — |

¹ Annual Costs derived from I.C.R.E.B. estimates except those for the Canal Flats Diversion structure and Associated Channel Improvements which were taken from the Crippen Wright Engineering Report, 1958. All costs adjusted to 5½% interest rate.

² Firm energy outputs based on 20-year power studies of the Water Resources Branch.

³ Maximum annual diversion from Kootenay River of 1.5 max. and max. rate of diversion at 5,000 cfs. Minimum flow of Kootenay River below Canal Flats maintained at 200 cfs.

Crippen Wright Engineering Ltd. concluded that diversion of up to 5,000 cfs at Canal Flats could be handled with "moderate expenditures" and with outstandingly economical results in terms of increased power generation at downstream plants". They also concluded that:

Two other possible sites for a diversion dam on Kootenay River are situated near the confluence with the Bull River, one just above the confluence, and the other just below. Schemes incorporating diversion dams at these alternative sites are found to be uneconomic in comparison with schemes dependent on a diversion dam at Canal Flats or Copper Creek, and they are not recommended.

7. Studies by the International Columbia River Engineering Board

The findings given in the 1959 Report of the International Columbia River Engineering Board, while complicated by the fact that the studies were based on systems fully integrated with the United States, still indicated that the plan calling for a limited diversion of the Kootenay River produced the lowest cost power in Canada. The results of a comparison of the three "Low Arrow" plans studied by the Board are given in Table 6.

In light of the results of studies of independent development carried out by the Water Resources Branch and tabulated on Tables 3, 4 and 5, it is apparent that a Canal Flats Diversion Plan, a plan which was not studied by the International Columbia River Engineering Board, could produce a lower average unit cost of energy in Canada than any of the three plans studied by the I.C.R.E.B.

8. Re-Evaluation of Studies

During and since the negotiations, more intensive studies have been carried out to obtain additional data on site conditions, river flows, future load requirements, power supply, probable returns from downstream power benefits, and other factors which have a major effect on the cost of hydro-electric power generation in the Columbia River basin.

On the basis of the latest information available on project data and proposals, re-evaluation of certain of the studies have been carried out for independent development of Canada's hydro generating potential in the Columbia River basin. In recognition of the latest proposals for the development of projects on the main stem of the Columbia River at Mica Creek, Downie Creek, and Revelstoke Canyon, a review was made of the studies of the Canal Flats Diversion and Dorr-Bull River Diversion plans for independent Canadian development.

The review was carried out on the basis of latest project and cost data available. Power output studies were re-run for a 30-year period covering the years 1928 to 1958 to extend the analyses by 10 years over the old studies. A comparison of the two plans is given in Table 7.

The comparison once again demonstrates conclusively that the best use plan for independent development of the Columbia River basin in Canada would be the Canal Flats Diversion Plan.

TABLE 6
COMPARISON OF CANADIAN "AT-SITE" BENEFITS AND COSTS FOR SYSTEMS INTEGRATED WITH U.S. GENERATION¹
(On the Basis of Firm Energy Output under 1985 Conditions)

| Development Plan | Annual ² Cost | Firm ³ Energy | Unit Cost of At-Site Energy | Increment Over Sequence VII-A | | | Increment Over Sequence VIII-A | | |
|---|-----------------------------|-----------------------------|-----------------------------------|-------------------------------|---------------------|-----------------------------------|--------------------------------|---------------------|-----------------------------------|
| | | | | Annual Cost | Firm Energy | Unit Cost of At-Site Energy | Annual Cost | Firm Energy | Unit Cost of At-Site Energy |
| | \$1,000 | 10 ⁶ kwh | Mills/kwh | \$1,000 | 10 ⁶ kwh | Mills/kwh | \$1,000 | 10 ⁶ kwh | Mills/kwh |
| <i>No Diversion</i> (Sequence VII-A) | 60,594 | 22,093 | 2.74 | — | — | — | — | — | — |
| <i>Copper Creek Diversion</i> (Sequence VIII-A) | 64,069 | 24,186 | 2.65 | 3,475 | 2,093 | 1.66 | — | — | — |
| <i>Dorr-Bull River Diversion</i> (Sequence IX-A) | 69,629 | 25,956 | 2.68 | 9,035 | 3,863 | 2.34 | 5,560 | 1,770 | 3.14 |

¹ Plans of Development from I.C.R.E.B. Report.

² Costs from I.C.R.E.B. estimates adjusted to 5½% interest rate.
Energy outputs from I.C.R.E.B. Power Studies (note adjustments in Table 21 of I.C.R.E.B. Report).

TABLE 7
INCREMENTAL COMPARISON OF DEVELOPMENT PLANS FOR INDEPENDENT CANADIAN SYSTEM OPERATION^{1,2}
Based On 30-Year Output Studies (1928-58)

| <i>Hydro-System</i> | Installed Capacity | Annual Cost ³ | Average Energy | Firm Energy |
|---|--------------------------------------|-----------------------------|-------------------|----------------|
| Dorr-Bull R. Diversion Plan..... | 4,870 | 18,148,000 | 3,416 Mw Yr | 3,201 Mw Yr |
| Canal Flats Diversion Plan..... | 4,876 | 4,147,000 | 3,059 Mw Yr | 2,851 Mw Yr |
| <i>At-Site Condition</i> | Increment between the two plans..... | 0 | 14,001,000 | 357 Mw Yr |
| | | | 3,127 MKwh | 3,066 MKwh |
| Unit Cost of increment of at-site energy—Mills kwh..... | | | 4.48 | 4.57 |

¹ Annual costs derived from latest estimates by Montreal Engineering Co. Ltd. and the Water Resources Branch. All costs adjusted to 5½% interest rate.

² Energy outputs from Water Resources Branch power output studies.

³ Excluding costs of elements that are common to both plans.

HOUSE OF COMMONS
Second Session—Twenty-Sixth Parliament
1964

STANDING COMMITTEE
ON
EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE
No. 4

FRIDAY, APRIL 10, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESSES:

The Hon. Paul Martin, Secretary of State for External Affairs; Mr. G. M. MacNabb, Water Resources Branch, Department of Northern Affairs and National Resources; Dr. M. E. Andal, Associate Director of Economics and Dr. A. Leahey, Co-ordinator of Soil Surveys, Department of Agriculture; Mr. J. F. Parkinson, Department of Finance.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--------------------------------|----------------------------|----------------|
| Brewin, | Fleming (<i>Okanagan-</i> | Macdonald, |
| Byrne, ¹ | <i>Revelstoke</i>), | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Forest, | Martineau, |
| Cameron (<i>Nanaimo-</i> | Gelber, | Nielsen, |
| <i>Cowichan-The Islands</i>), | Groos, | Patterson, |
| Cashin, | Haidasz, | Pennell, |
| Casselman (Mrs.), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Langlois, | Turner, |
| Dinsdale, | Laprise, | Willoughby—35. |
| Fairweather, | Leboe, | |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee.

¹ Mr. Byrne replaced Mr. Basford at the afternoon sitting, April 10, 1964.
1964.

ORDER OF REFERENCE

FRIDAY, April 10, 1964.

Ordered—that the name of Mr. Byrne be substituted for that of Mr. Basford on the Standing Committee on External Affairs.

Attest.

LÉON-J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

FRIDAY, April 10, 1964

(7)

The Standing Committee on External Affairs met at 9.00 o'clock a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Gelber, Groos, Haidasz, Herridge, Klein, Laprise, Leboe, Macdonald, Matheson, Nielsen, Nesbitt, Patterson, Pennell, Pugh, Ryan, Turner, Willoughby (25).

Also present: Mr. Byrne, M.P.

In attendance: The Honourable Paul Martin, Secretary of State for External Affairs; Mr. Gordon Robertson, Clerk of the Privy Council; *From the Department of External Affairs:* Mr. A. E. Ritchie, Assistant Under-Secretary; *From the Department of Northern Affairs and National Resources:* Mr. G. M. MacNabb, Water Resources Branch; *From the Department of Agriculture:* Dr. M. E. Andal, Associate Director of Economics; Dr. A. Leahey, Coordinator of Soil Surveys.

Mr. MacNabb was questioned, referring to a number of maps and charts in his replies. On the suggestion of Mr. Turner, it was agreed that Mr. MacNabb arrange to have the maps and charts photographed and that they be included in the Proceedings. (*Note:* Because of the time required to have the maps and charts photographed and reduced, they are not included in this issue, but will be included at a later date).

Mr. MacNabb read into the record a paper entitled "Memorandum re Effect on Agriculture of Construction of Reservoirs on Columbia and Kootenay Rivers between Luxor and Dorr" prepared by the Department of Agriculture.

He also tabled a paper entitled "A Preliminary Report on the Agricultural Potential of the Area Affected by the Proposed High Arrow Lakes Dam Project". The Committee agreed that this paper should be included in the Minutes of Proceedings. (*See Appendix D.*)

Drs. Andal and Leahey were called, made brief statements and were questioned.

Mr. Byrne, M. P., who was not at that time a member of the Committee, also questioned the witnesses.

At 11.00 a.m., the Committee adjourned to attend the sitting of the House, having agreed to sit at 3.00 p.m. this day.

STANDING COMMITTEE

AFTERNOON SITTING

(8)

The Committee reconvened at 3.00 p.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Byrne, Cameron (*Nanaimo-Cowichan-The Islands*), Cashin, Davis, Deachman, Fairweather, Fleming (*Okanagan-Revelstoke*), Gelber, Groos, Haidasz, Herridge, Kindt, Klein, Laprise, Leboe, Macdonald, MacEwan, Matheson, Patterson, Pennell, Pugh, Ryan, Willoughby (24).

In attendance: The same as at the morning sitting, and Mr. J. F. Parkinson, Department of Finance.

Mr. Patterson, on a point of order, drew the Chairman's attention to the fact that at the morning sitting Mr. Byrne, who was not a member of the Committee, had questioned the witnesses. Mr. Byrne stated that he had been temporarily replaced on the Committee by Mr. Basford and apologized to the Committee for questioning witnesses while he was not a member. He pointed out that, by an order of the House earlier this day, he was again a member of the Committee.

Mr. MacNabb and Dr. Andal were questioned.

During the questioning, Mr. MacNabb tabled Appendices I and II to the Report to the International Joint Commission, United States and Canada, Water Resources of the Columbia River Basin, Columbia River in Canada, prepared by the International Columbia River Engineering Board, 1959. These documents were deposited with the Clerk for reference by the members.

Additional charts referred to by Mr. MacNabb during the questioning were ordered by the Committee to be included in the Minutes of Proceedings. (See Note referring to maps and charts at morning sitting.)

The Minister was questioned, and was assisted by Mr. Parkinson.

At 5.55 p.m., the Committee adjourned until 4.00 p.m., Monday, April 13, 1964.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

FRIDAY, April 10, 1964.

The CHAIRMAN: Gentlemen, I should like to call the meeting to order. I see a quorum.

We met this morning with the intention of questioning Mr. MacNabb. It was agreed that preliminary to such questioning Mr. MacNabb would give a presentation, being a summation, as I understand it, of the material which he has prepared, and I refer to this study, "Water Power Resources in the Columbia River Basin in Canada, investigations by the water resources branch."

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, before we commence could I ask whether it is your intention to confine the questioning to this document, or may we proceed further than that?

The CHAIRMAN: We have only from 9 until 11 at our disposal this morning. May I suggest that we allow Mr. MacNabb to make his presentation as quickly as possible. Perhaps members would be good enough to write out their questions and send them up to this table so that if there are a great number of questions in respect of one subject I can then try to recognize an individual in an attempt to confine our questioning to that general area in the beginning and then move to other matters. Would that be satisfactory?

Mr. LEOE: Perhaps members could voluntarily desist from questioning until the general line of questioning by a member is completed, because the subject may well be exhausted during that initial questioning.

The CHAIRMAN: I think that is exactly what we are informally trying to do. Perhaps we could stay on one subject until we have exhausted our questions in that regard and then move to another subject. As I understand it Mr. MacNabb is actually Mr. Turner's witness.

Mr. HERRIDGE: We will likely call Mr. MacNabb back next week.

The CHAIRMAN: Suppose we start off this morning with you, Mr. Herridge, leading off with the questioning. Would that be satisfactory?

Mr. HERRIDGE: No, Mr. Cameron is going to commence questioning.

The CHAIRMAN: Mr. Cameron, would you carry the first questions to Mr. MacNabb after he has completed his presentation?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes.

The CHAIRMAN: Gentlemen, would you come to order? This is a noisy little room.

Mr. G. M. MACNABB (*Hydraulics Division, Department of Northern Affairs and National Resources*): I will try to go through this report very quickly. I should first like to refer to page 4 where the system regulation studies which were carried out by the branch are very briefly summarized.

The first group were preliminary studies consisting of power output studies of periods of critical streamflow only. Power which is sold at the highest price must be guaranteed to be available at all times and you must study periods of critical low streamflow to determine what power you can produce at a project and sell on a continuous basis. These first studies dealt solely with periods of critical streamflow and were made to evaluate and select the most desirable projects for inclusion in the more detailed studies which came later.

The second group involved studies of 20 year streamflow records containing both high and low water conditions. They were made to provide power output data for economic comparison of several alternative plans.

The third group involved consideration of the downstream benefits that we might get from the United States.

The fourth group concerned diversion to the Fraser river system.

I will concentrate today on the first two groups.

Perhaps we can now turn to page 7 dealing with the various sections of the river basin in Canada. I refer you to page 7, item (c), Kootenay (east Kootenay reach). This is in relation to the Kootenay river before it enters the United States.

We looked at a number of possible dam sites in this area. All of them would have been quite expensive, and the power costs at those sites with the water remaining in the Kootenay river are set out in table 1, two pages further on. Perhaps I could refer to that table now.

We studied three possibilities, and these are all non-diversion structures on the Kootenay river. No consideration of the diversion of the Kootenay river to the Columbia was given in this case. We wanted to see what the cost of power at Kootenay river sites would be if the water was left in the Kootenay river.

We studied the Bull river-Dorr projects. As you can see, the cost was 11.5 mills at site which was quite prohibitive.

Then we removed the Bull river project and put in a higher dam at Dorr. This made it slightly more feasible but still it was out of the question as far as economics were concerned. The same applied to the Bull river dam itself with an at site cost of 9.6 mills. So it was obvious that projects on the Kootenay river in Canada (the east Kootenay) were not economical on the basis of their at site production.

Mr. MACDONALD: May I just inquire at this point whether you are assuming that the water would not be backed up at the Canal Flats but go down further on the Kootenay?

Mr. MACNABB: It was not to be diverted at all, keeping the Kootenay river in the Kootenay. It was apparent at that time, and you will see if you turn to the next page, that the economics of these projects on the Kootenay could perhaps be improved if the projects were used to divert Kootenay water to the Columbia river where there was more head available for the generation of power in Canada.

I think I should read section (d). It reads as follows:

The physical possibility of diverting the Kootenay river to the Columbia river permits considerable scope in planning for such a development. As a result of studies by the water resources branch, it was determined that the diversion could be accomplished by projects located on the Kootenay river at either Canal Flats, Cooper creek—

That is immediately downstream of Canal Flats. Then to continue:

—or Bull river and Dorr.

Dorr is located almost at the United States border.

Then it continues:

Depending upon the degree of diversion that would be economically desirable, the amount of water diverted annually could vary from about 1.5 million acre-feet with the diversion structure located at Canal Flats, to about 6,000,000 acre-feet with diversion structures located at Bull river and Dorr. The latter would amount virtually to almost complete diversion of the upper Kootenay river in Canada.

These studies are summarized on the next page but I am afraid this is very fine print. I will try to refer to table 2. We have a larger chart here but I do not know whether it would help you much more because there is so much data on the one table. I think it will be difficult for you to see this. I think perhaps you may be better off reading your own copy of the report.

Starting at the column marked 1, I will just show you the sequence of studies which were followed.

The first study contained only the projects on the main stem of the Columbia river, Mica creek, Downie creek and the Revelstoke canyon. There was no diversion from the Kootenay considered at all. That study was carried out and we determined the price of at site power. You will notice at the bottom of the table the figure 2.63 mills per kilowatt hour.

Now, using that system as a base of measurement we then started to add projects to it to see what the incremental benefits and incremental costs were.

In column 2 we added a project at Nicholson in the upper Columbia valley again with no diversion. At the bottom of the table you will see that that increased the cost of power in the system. That project was then rejected.

We tested other projects. In column 3 you will note one at low Calamity, and in column 4 at Nicholson and low Calamity and finally at column 5 high Calamity, upstream from Mica and at Calamity curve. All of these did not take into consideration diversion of the Kootenay river. You will note at the bottom of the table that they all increased the cost of power in the Canadian plan.

Now, the next five columns, Nos. 6, 7, 8, 9 and 10, all involve diversion at Canal Flats, a limited diversion of the Kootenay river. No. 6 is just the Canal Flats diversion itself, putting water down to Mica, Downie and Revelstoke. You will notice at the bottom of that table that the cost is 2.58 mills at site, and if you compare that to any other cost across that table you will see it is the cheapest of any of them.

We proceeded from that study No. 6 to add projects on the Columbia to see what effect the diversion at Canal Flats would have, and once again those additional projects increased the cost of power. It was therefore apparent up to that point that the diversion of Canal Flats into the Columbia supplying additional water to Mica, Downie and Revelstoke, provided the cheapest power for Canada.

We then studied two further degrees of diversion which appear in columns 11 and 12. Rather than diverting with the simple structure of Canal Flats, we considered the construction of a reservoir on the Kootenay at Copper Creek, backing water up over the divide into the Columbia headwaters and being controlled on the Columbia at Luxor—this is called the Copper Creek-Luxor diversion. In the report by the international Columbia river engineering board this is referred to as sequence VIII(a). You will notice at the bottom of that column the cost was 2.95 mills per kilowatt hour as compared with the figure 2.58 in column 6, the Canal Flats diversion.

If you go down to the bottom right hand corner of that table you will see a heading there, "Increment from the Copper Creek diversion plan No. 11". We compared the Copper Creek diversion plan No. 11 with the Canal Flats plan No. 6, comparing the increment of cost and the increment of power produced between those two plans. The increment of extra power that the Copper Creek diversion would produce was 6.7 mills at site. As a rough measure of the transmission costs, you can usually add about $1\frac{1}{2}$ mills on to this to get the cost of the power delivered at Vancouver. It is therefore obvious that that increment of power was not economical.

Now, we did the same thing with a greater diversion plan. This is set out in column 12. You will see there that a dam at Bull river was considered to back the Kootenay river up across the divide and into the headwaters of the Columbia. Once again, however, that increased the cost of power. Down

at the bottom right hand corner of the table you can see the comparison of the Bull river diversion plan with the Canal Flats plan. The increment at site power was five mills. Once again, you can add on about a mill and a half, which would mean $6\frac{1}{2}$ mills delivered to loads which was not competitive with the alternative sources. These were the results of studies of stream flow record made over 20 years and they firmly established that a limited diversion of the Kootenay river produced the most economical increment of power in Canada for the independent development by Canada of the Columbia.

You will now turn to table 3 on page 14. Here again we studied four plans of development by Canada. The first one is non-diversion of the Kootenay, the second, Canal Flats diversion, the third, the Copper Creek diversion, which is sequence VIII (a), and finally the Dorr-Bull river-Luxor diversion, which is sequence IX (a) of the Columbia river engineering board report.

In the first column you can see that as you begin to divert greater quantities of water out of the Kootenay, you do get greater amounts of power developed in the Columbia river basin; it goes from 20 billion kilowatt hours with no diversion, up to a maximum of 24 billion kilowatt hours with maximum diversion. The first column shows the amount of power developed at site; the second one is the amount of power which would be delivered to loads after deducting transmission losses. Again it shows that the greater the diversion, the more power would be delivered to loads. In the third column we add thermal electric energy at load in varying amounts so that each system will be providing the same amount of power at load in British Columbia, and this is shown in the next column. When you add the hydro output and the thermal output each system produces 22,644 million kilowatt hours annually at loads. We balanced each system, the combination of hydroelectric and thermal electric, and we compared the cost.

The next column is at site cost of the hydro. You will notice that the cheapest plan is the non-diversion plan, and the cost increases as you have to build these diversion structures on the Kootenay river.

The next column is the transmission cost. Naturally the more power you produce, the more you have to transmit to the loads and the higher the transmission cost.

The next column is cost of thermal electric power to bring these systems to an equal potential. The additional thermal energy in the non-diversion system shows the greatest cost and is charged against the non-diversion. We then totalled the annual costs. You will remember that each one of these systems produces the same amount of power when the hydro and the thermal electric outputs are combined. When you look at the total annual cost, you will see that it is \$103 million for the non-diversion and \$101.6 million, or \$102 million for the Canal Flats diversion, \$103 million for the Cooper Creek diversion and \$104 million for the maximum diversion. Of those plans, including the cost of thermal electric power, the Canal Flats diversion plan, was the most economical.

The last column reflects the results in mills per kilowatt hour at load.

At this point I think I might skip to the last table of the report to bring you right up to date on the last study which had been done and which only confirmed the earlier studies. Using the most recent costs of these projects, and studying the systems of stream flow over 30 years rather than 20 years, you will see that table 7 gives the comparison of the maximum diversion plan with the limited diversion plan at Canal Flats. In other words, it is a comparison of what is called the sequence IX (a) plan with a plan of limited diversion at Canal Flats. I should like to explain this in greater detail. You will see that it is noted in footnote 3 that the annual costs quoted apply only to the increments which are not common to both plans. For example, the projects of Mica Creek, Downie Creek and Revelstoke are in both plans, so we have left out those costs in this comparison. We are only considering the projects which

are not common to the two plans. The maximum diversion plan would involve an annual cost of about \$18 million, and the Canal Flats plan about \$4 million. This is reasonable; the Canal Flats plan provides the diversion very inexpensively, whereas the Dorr-Bull river-Luxor plan involves the construction of dams at Dorr on the Kootenay river near the international boundary, and a large reservoir formed by the Bull river and Luxor dams. The latest estimates of these three combined has capital costs about \$212 million.

Once again you will see that the maximum diversion plan produces more average energy, 3,416 megawatt years as compared with 3,059 in a limited diversion. On the basis of firm energy in the next column, once again there is an increase; the greater diversion, the more energy you produce.

Let us drop down now to the next line which compares the increments between the two plans. There is no difference in installed capacity. The maximum diversion plan costs about \$14 million more than Canal Flats; it produces about 357 megawatt years additional average energy and 350 megawatt years of additional firm or dependable energy. So we compare the increment of cost of \$14 million to the increment of energy produced.

In the last line we show that the at site cost of this increment of energy is about 4.5 mills per kilowatt hour for both average and dependable energy. You add a mill and a half to that for transmission, and this power would cost you six mills delivered at Vancouver. This can be produced at Vancouver more cheaply with thermal electric power. So the increment of power produced by the maximum diversion plan was shown in all the studies carried out by the branch to be not warranted on the basis of its incremental cost.

That is all, Mr. Chairman.

The CHAIRMAN: Mr. Cameron?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. MacNabb, I wonder if you would turn to page 6 of your report where, at the bottom of the section headed "Main Stem of the Columbia River", you have this to say:

—it was apparent even in these early studies by both government and consulting engineering firms that the great value of the Arrow lakes site was the important role it could play in a plan of co-operative river development with the United States and particularly in promoting the effective use of Canadian storage farther upstream for production of power in Canada within such a co-operative arrangement.

Could you expatiate a little on that to explain to me how the dam at the outlet of the Arrow lakes could promote a more effective use of Canadian storage for power production in Canada than the alternative proposed in the 9 (a) sequence.

Mr. MACNABB: Yes, sir. From these studies we knew the plan of operation which we would like to follow at the Mica dam in Canada when we use that dam to the maximum advantage of Canada for at site generation.

It was apparent from these studies that that plan of operation would not be consistent with a plan of operation of the storage at Mica which would give the maximum downstream benefits to the United States; and of which under the treaty Canada receives a half share. Therefore, you either have to sacrifice downstream benefits or sacrifice at site generation if you go into a co-operative development.

With Arrow lakes downstream of Mica acting as a buffer zone between Canadian generation and United States generation, it was apparent that it could act as a re-regulating reservoir. Studies carried out since then by a number of engineering firms have proved that it is very valuable in this role and that we can operate Mica for Canadian needs, take those stream flows as they go downstream and re-regulate them at the Arrow lakes project so they

cross the border in a pattern which will give maximum downstream benefits. We, therefore, pretty well get the best of both conditions with that project.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I suppose, Mr. MacNabb, that you are aware of and, I presume, familiar with the report of 1959 of the international Columbia river engineering board?

Mr. MACNABB: Yes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Do you recall that statement on page 103 as to the net effect of High Arrow?

Mr. MACNABB: I certainly do, sir. I am afraid that statement has been quoted in such a way that it might indicate that High Arrow was of no advantage or of very limited advantage to Canada. However, that statement concerned itself only with the benefits of High Arrow to the generation of power in Canada and not to the generation of downstream benefits in the United States, of which Canada receives a half share.

I think you will find that the international Columbia river engineering board report to which you are referring says that the Arrow lakes project is one of the most advantageous projects for co-operative development.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): What I copied reads as follows:

The net effect of High Arrow is to add 196 megawatts to United States power and no net increase to Canada. The value to Canada of High Arrow is \$3.5 million versus interest amortization costs of \$7 million.

Mr. MACNABB: Paragraph 244 on page 103 of the international Columbia river engineering board report says:

Inclusion of High Arrow in any of the plans provides no net increase in the 20-year output in Canada but increases the critical period average output by about 27 megawatts.

Note that this refers to output in Canada.

In the United States, however, High Arrow adds about 164 megawatts to the critical period average output and 196 megawatts to the 20-year average output. The net result of including High Arrow is that the unit costs of the incremental power outputs are increased in Canada and decreased in the United States.

But my comment was that this paragraph does not consider any return to Canada of downstream benefits produced by the High Arrow dam in the United States. This was concerned only with the development of power in Canada from the Arrow project.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I wonder, Mr. MacNabb, if you would now turn to the statement of General McNaughton.

Mr. MACNABB: Before doing that, sir, may I refer to one statement?

On page 62 of the presentation paper under the subheading (a) of (1), "Arrow Lakes Storage" it is stated that:

While the Arrow lakes dam was not included in any studies of independent development by Canada because of its limited benefit to generation within Canada, it was always recognized that the project would play a major role in any co-operative development. In its 1959 report to the International Joint Commission the international Columbia river engineering board noted that the Arrow lakes project was "... one of the most economical storage reservoirs in the plans of development".

Later on in that same paragraph the Montreal Engineering Company is quoted as saying:

In the integrated program the Arrow lakes storage is the most productive project that could be undertaken as an initial stage.

So these two reports did recognize there was a substantial downstream benefit credit to the project for which Canada would receive credit whereas the paragraph you referred to in the report does not take that into account.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This deals with another consideration which must be kept in mind. Now, would you turn to the preliminary remarks of General McNaughton which precede the file of his correspondence with the Secretary of State for External Affairs? Have you a copy there?

Mr. MACNABB: I am afraid I do not have a copy of that statement here, sir. Would you lend me one? Thank you.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You will note that General McNaughton said:

No treaty on the Columbia can serve Canada effectively unless it satisfies the following three principles.

1. As much of the water which is stored in Canada as possible must be stored at as high an elevation as supply permits. This allows the best physical use of this resource for both countries and provides the most flexibility for all time to adapt to changing needs as these needs develop (The first of these will be an increasing need for irrigation).

Do you concur in the view expressed by General McNaughton?

Mr. MACNABB: Let us take the first one first, "as much of the water which is stored in Canada as possible must be stored at as high an elevation as supply permits". The important phrase there is "as supply permits"; and if you add the Dorr, Bull river and Luxor projects which act as reservoirs upstream at Mica, to Mica, there is a duplication of storage to some extent.

This was proven in the studies of independent development which we ran in the water resources branch. We found that with no diversion of the Kootenay, or with limited diversion of the Kootenay, we would use annually about 7 million acre-feet of water at Mica. But if you had the maximum diversion storage upstream, which to some extent control some of the same water, you find you would use annually about 5 million acre-feet of storage at Mica. So it is all very well to say build projects at the highest elevation, but you must first make sure that you have an adequate water supply for those projects. Moreover the cost, as this report points out, did not warrant the extra cost of the generation that you get out of it.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): So you really do not concur with the balance of General McNaughton's statement that the existing draft treaty offends these principles in almost every article?

Mr. MACNABB: No, I do not.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You do not concur.

Mr. MACNABB: We have considerable flexibility in the system we have, and we make the best use of the water supplies which are available.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Now, passing on to the second principle:

On principle 2. Control of the Kootenay flows is placed entirely in U.S. hands because Libby is in U.S. territory and Canada has no right under the treaty draft to control the outflow.

Would you agree that that is one principle which should be followed?

Mr. MACNABB: I feel, sir, that it has been one of the principles which has been followed, particularly when this treaty was negotiated. The treaty follows the International Joint Commission's principles set out by the International Joint Commission in 1959, I believe it was, which called for the operation by the upstream country which would give an assured plan of operation to the downstream country. I feel we have negotiated a treaty which protects our right of operation, but still follows the International Joint Commission principle which gives the downstream country some assurance of what they would get out of this treaty, because if they did not have that assurance, they would not enter into a treaty.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Is that same principle applied to the rights of Canada with regard to the flow from the Libby dam as is applied to the rights of the United States with regard to the High Arrow dam?

Mr. MACNABB: Not at all, because there is a very basic difference here. The United States is here sharing one half of the benefits produced by our storage. But in the case of Libby we are not sharing with the United States the downstream benefits produced in Canada by that project. So you see, there is a very basic difference. If we were to share the cost of power benefits produced on the Kootenay river in Canada, by Libby, with the United States, we would certainly ask for some control over the operation of that dam, and we would also be asked, I feel, to share in the cost of it.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would it be correct to say that this treaty abrogates our right under article II of the Boundary Waters Act for a measure of control, and at the same time confirms the United States in its right under article II of that act?

Mr. MACNABB: I wish you would direct that question to Mr. Olson. I do not want to infringe on the legal profession.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): That is all.

Mr. DAVIS: Could Mr. MacNabb give us a very general idea of the total amount of money that the federal government has spent on engineering and other studies in the Columbia basin over the years?

Mr. MACNABB: I would have to rely on my memory for this one, Dr. Davis. I believe the water resources branch alone has spent something like—I believe it is—around \$4,000,000, but I cannot be certain of that.

Mr. DAVIS: It was many millions of dollars, in any case.

Mr. MACNABB: Yes, and this does not include the cost of mapping the entire basin, and the geological reports which have been done on the dam sites.

Mr. DAVIS: Yes. In other words, moneys have been spent for drilling to find out the foundation conditions?

Mr. MACNABB: That is correct.

Mr. DAVIS: And on topographical studies, and on streamflow measurements?

Mr. MACNABB: Yes.

Mr. DAVIS: And on preliminary engineering studies of dams and on the economics studies which you have referred to?

Mr. MACNABB: That is correct.

Mr. DAVIS: These have run to an order of magnitude of around \$4,000,000?

Mr. MACNABB: That is correct, and we have had consulting companies working for us, such as H. G. Acres & Company, The Montreal Engineering Company Limited, B. C. Engineering Company Limited, who did a report on

the diversion of Columbia water to the Fraser for us, and of course studies have been carried out by British Columbia itself, which has spent a considerable sum of money, I believe approximately \$10 million.

Mr. DAVIS: In other words, in all, something like perhaps \$15 million has been spent now on engineering and economic studies having to do with the upper Columbia and its development?

Mr. MACNABB: I think that would be a reasonably accurate figure, yes.

Mr. DAVIS: In relation to this treaty.

Mr. MACNABB: Yes, leading up to this treaty.

Mr. DAVIS: Yes, leading up to this treaty. Now, you have referred to various economic studies, and you have also used the term benefit to cost ratio. Looking at the upper Columbia in the international context you see that much of these various projects have been based on the benefit to cost ratio, in other words, to produce the highest results for the least outlay in dollars.

Mr. MACNABB: In comparing the benefit cost ratios you have to consider the sequence of development which you plan to make. The downstream benefits which we get from the United States are limited in the total amount available. The first project which is added gets a considerably greater share per unit of storage added than does the next one. Now, if you consider the sequence under which they will be physically constructed under the treaty, Duncan lake will be finished first. It will therefore get what we call the first added credit, and its benefit cost ratio is about 1.9 to one. In other words, the benefits are almost twice the cost. Arrow lakes, which will come next, one year later, has a benefit cost ratio on the basis of the remaining downstream benefits of about 1.8 to one. Mica, as the third project, with its generation considered, has a benefit cost ratio of about 1.1 to one. They follow in the proper order of benefit cost ratios. If Arrow lake was added first, its benefit cost ratio would be approximately 1.9 to one.

Mr. DAVIS: There was a variety of studies undertaken back in 1959. Looking at the different sequences, would it be possible to say that Arrow lake as a storage project had a very highly favourable benefit cost ratio?

Mr. MACNABB: Highly favourable, yes.

Mr. DAVIS: At the other extreme, would you find a project like Bull river-Luxor-Libby as being relatively low?

Mr. MACNABB: Bull river-Luxor, if you considered it first added to the system, would have a benefit cost ratio better than that of Libby, if it could get its maximum share of downstream benefits; but it does not come in that order of physical availability.

Mr. DAVIS: Would it be better than Arrow lake?

Mr. MACNABB: No.

Mr. DAVIS: It would be better than Duncan lake, of course?

Mr. MACNABB: No.

Mr. DAVIS: You have discussed these various sequences and possibilities. What happens with the main diversion of the upper Kootenay into the Columbia following our installations at Copper creek and at the international boundary? These various diversions are possible under the treaty, are they not?

Mr. MACNABB: That is correct. They are shown on the map over in the corner of the room. For the first 20 years there will be no diversion of the Kootenay river; that is, 20 years from the date of ratification. Mica would not have any generators put in it for perhaps 10 years. So, for the first 10 years let us say there is no development on the main stem. For the next 10 years we can develop Mica generation, and even Downie creek and Revelstoke

canyon. So, on the Columbia we have developments over which the diverted water would go. At the 20 year point we have the right to divert 1.5 million acre feet economically. In 60 years time Canada can build a dam at Bull river on the Kootenay, and at Luxor on the Columbia.

On the profile on page 40 of the presentation paper, at the top of that page, you will see the dams at Bull river on the Kootenay, and at Luxor on the Columbia. In 60 years time this project could be built, and we have the right to make a diversion which would amount to 75 per cent of the flow of the Kootenay river. In 80 years time we can build the dam at Dorr, also, and pump the water up so it can then flow down the Columbia. That would amount to a diversion of about 90 per cent of the flow of the water at the border. Twenty years after ratification we can divert at Canal Flats 20 per cent of the total Kootenay flow.

Mr. DAVIS: Which is most of the flow of the Kootenay today at that point.

Mr. MACNABB: Yes, most of it.

Mr. DAVIS: Then in 60 years time, we can make the Copper creek diversion?

Mr. MACNABB: No; Bull river-Luxor, a greater diversion.

Mr. DAVIS: In other words, we can accomplish the maximum diversion which you have studied?

Mr. MACNABB: Not the maximum. When you add the Dorr project to that at the 80 year period, that becomes the maximum diversion we have studied.

Mr. DAVIS: In other words, if the treaty is still in effect 80 years from now, the maximum diversion can be made from the upper Kootenay into the Columbia?

Mr. MACNABB: Yes.

Mr. DAVIS: Can one not reason from that that the plan sometimes referred to as the McNaughton plan can evolve?

Mr. MACNABB: Yes, if the economics dictate it in the future; that is not the case now. The incremental benefits do not warrant the expenditure.

Mr. DAVIS: This raises the question of Libby. I think it was established that so long as the treaty is in effect Canada does not have to pay for dislocations downstream; in other words, we can accomplish these diversions without having to pay compensation in respect of Libby.

Mr. MACNABB: There is no legal liability upon Canada in the treaty to pay any compensation because of damages or losses brought about by these diversions in Canada.

Mr. DAVIS: In other words, the McNaughton plan can evolve in the framework of this treaty in the fullness of time.

Mr. HERRIDGE: Why is it not desirable now?

The CHAIRMAN: Mr. Herridge—

Hon. PAUL MARTIN (*Secretary of State for External Affairs*): It would cost too much; that is the reason.

Mr. DAVIS: Will it be possible ultimately, depending on the various requirements and what they will pay for storage, perhaps after the termination of the treaty, to put generating machinery on either Duncan lake or the High Arrow dams?

Mr. MACNABB: This would be dictated by the economics at the time. This is a question which properly should be addressed, I believe, to the British Columbia authorities. I do not believe the economics of it would warrant it at this time.

Mr. DAVIS: But, depending upon some future negotiations many years from now, it might conceivably pay to take additional benefits from the use of the installed machines?

Mr. MACNABB: This would not necessarily have to depend upon negotiations at all. It would be a decision made by the British Columbia hydro and power authority in respect of whether the power they could get out at site from those projects would warrant the cost.

Mr. DAVIS: In any case, it is possible that on site generation will occur, say, at Duncan lake?

Mr. MACNABB: Yes. The only consideration would be the cost of putting in the equipment to generate the power.

Mr. DAVIS: Assuming the financial arrangement under the treaty as envisaged, the cost of putting machines at Mica creek, which is the only real consideration to Canada, would result in power at $1\frac{1}{2}$ mills per kilowatt hour.

Mr. MACNABB: Yes.

Mr. DAVIS: In the tables you discussed this morning, we see figures in the order of $2\frac{1}{2}$, three, four and five mills.

Mr. MACNABB: I think it would be more correct to compare the $1\frac{1}{2}$ mill figure which is based on the most recent cost estimates available with the cost of power at Mica without the treaty again based upon the most recent cost estimates. That would be about four mills at site, compared to $1\frac{1}{2}$ mills under the treaty.

Mr. DAVIS: The treaty, in effect, has the dam built for us.

Mr. MACNABB: Yes, and about half the cost of putting in the generating equipment.

Mr. DAVIS: So, the cost of at site power, as distinct from the treaty which builds the dam for us, is in the order of one to $1\frac{1}{2}$ mills.

Mr. MACNABB: Yes.

Mr. DAVIS: Referring to these various diversion schemes we saw, this was in the order of four mills and incremental costs in the order of five mills?

Mr. MACNABB: Yes.

Mr. DAVIS: So, the additional power we could produce under the diversion scheme is much more expensive than the power we can get immediately under the treaty from Mica?

Mr. MACNABB: Yes.

Mr. DAVIS: In the long run we can have these diversion schemes and more expensive power, but in the meantime we can have cheaper power.

Mr. MACNABB: Yes, if the economics warrant it, we can make these developments in the future.

Mr. HERRIDGE: I have been reading a pamphlet by a well known engineer in Canada, which I would like to quote.

Mr. MACDONALD: Mr. Chairman, I wonder if Mr. Herridge would identify the pamphlet before he proceeds?

Mr. HERRIDGE: The pamphlet is entitled Action on the Columbia, by Dr. Jack Davis.

Mr. DAVIS: What was the date?

Mr. HERRIDGE: February 15, 1963.

Mr. DAVIS: That is before the protocol and sales agreement were negotiated.

Mr. HERRIDGE: Well, the protocol does not affect it to any extent, but I just want to ask a question.

Mr. Chairman, would you allow me to proceed.

The CHAIRMAN: You may, Mr. Herridge.

Mr. HERRIDGE: The article reads as follows:

Prompt action in view of the alternatives open to the United States is required. We therefore propose that:

1. An interim agreement be concluded with the United States which would permit agreed projects to go ahead one at a time;

2. Construction be started, within six months, on the largest single Canadian treaty project, the Mica Creek dam.

I agree with that; we all do.

3. Negotiations be commenced with a view to concluding a new treaty expressed in terms of principles—

Not protocols.

—which are equally beneficial to Canada and the United States.

During the negotiations several important objectives should be borne in mind. These are:

- (a) That the program be flexible. New cost data, changing market requirements and alternative opportunities for development should be taken into account at each stage in the harnessing of this important resource.
- (b) That the power benefits resulting from cooperative action should be shared equally between Canada and the United States.
- (c) That the savings, expressed in terms of power costs, which result from this great international undertaking should be the same in both countries.
- (d) That Canada should receive appropriate compensation for flood control benefits, created in perpetuity, in the United States; and
- (e) That Canada's sovereign right to divert waters flowing within its own boundaries should be limited only to the period in which the treaty is in force.

Mr. MACNABB: Mr. Herridge, I do not know whether or not I got all your points but I will try to answer the ones which I think I have.

Mr. HERRIDGE: Would you answer the points seriatim.

Mr. DAVIS: Mr. Chairman, if I may make a short comment at this time, this was written prior to the admission to power of the present government and at that stage I was much impressed by what were the apparent difficulties of coming to an agreement between Ottawa and Victoria and, more particularly, between Canada and the United States.

Since then, and under the able chairmanship of our chief negotiator, Mr. Martin, it has been possible to conclude an arrangement that is not only one step at a time but it involves three steps at once, namely the building of three projects, and I think the first best three projects are still in the treaty.

Mr. HERRIDGE: Do you admit there are no changes in the physical aspects of the treaty?

Mr. DAVIS: The protocol enumerates modifications and clarifications to the treaty.

Mr. HERRIDGE: But not in the physical aspect?

Mr. DAVIS: Well, for example, we were specifically limited in the treaty as to the height of the Mica Creek dam and so on. Now, these variations are possible. A high dam is envisaged now, so physical aspects are being changed.

The CHAIRMAN: Perhaps we had better call Dr. Davis as an outstanding authority on a later occasion.

Mr. MACNABB: In respect of the first paragraph involving flexibility, I believe the treaty program had sufficient flexibility and I believe that it is improved upon by the protocol. Certainly the flexibility which we felt the treaty had has been clarified by the protocol.

The next paragraph states that the power benefits resulting from co-operative action should be shared equally between Canada and the United States. The power benefits are shared equally, and there is no doubt about that. The benefits in power, as I have said, are shared equally, and this is as recommended by the International Joint Commission principle.

The next paragraph states that the savings, expressed in terms of power costs, which result from this great international undertaking, should be the same in both countries. In reply to that, if we were to try to share savings we would get into the problem of what the power is worth in the United States and what the power is worth in Canada—and also, how much they are paying and how much we are paying, and the International Joint Commission tried to get around this problem by saying that the power, not the monetary savings, should be shared equally. The treaty abides by that recommendation.

The next paragraph which you read states that Canada should receive appropriate compensation for flood control benefits, created in perpetuity, in the United States. If you look at the presentation paper at page 90, sub item 6, it says:

The \$64,400,000 (U.S.) payment which Canada receives under the treaty, and which benefits from the $3\frac{7}{8}$ per cent United States discount rate, is 24 per cent greater than the value to Canada at $5\frac{1}{2}$ per cent interest of annual payments made in perpetuity for the flood control.

Therefore, we had two choices. We could have taken annual payments for this flood control, but rather than that we negotiated a lump sum payment and we negotiated it at a low interest rate of $3\frac{7}{8}$ per cent. That gave us a benefit which is greater than what the annual payments would have been at $5\frac{1}{2}$ per cent interest in perpetuity.

The last point was in respect of Canada's sovereign right to divert waters flowing within its own boundaries, and you go on to quote that this should be limited only to the period in which the treaty is in force. In reply to that, I believe this is in fact the case under the Treaty but, once again, I would suggest that this should be directed to a lawyer.

Mr. DAVIS: Mr. Chairman, I would like to make one further comment. In February of last year we had a treaty which put certain obligations on Canada to build certain structures. We did not have any financial arrangement which made the economics of this treaty possible; in other words, we had no economics at all.

Mr. MACNABB: That is quite true.

Mr. DAVIS: Whereas, today we have a sales agreement which provides the funds necessary—in fact, more than necessary—to build the projects, so, obviously, a year ago there were many grounds on which one could be critical of the treaty and obligations without income. Today we have income which is more than commensurate with the obligations.

Mr. MACNABB: Under the original treaty, without the sales agreement, Canada was dependent upon future conditions in load growth and economics of power development in respect of the amount of downstream benefits we would get out of the treaty. We had estimates of what that might be but these necessarily had to be estimates.

With the sales agreement and the protocol we now have a guaranteed financial return out of this treaty, so we know that our costs are more than covered.

Mr. HERRIDGE: Mr. Chairman, I have one more question along this same line. I want to quote from a remark made by Mr. Davis on December 12, 1962, in the house, which has nothing to do with payment for compensation or anything else.

Mr. MARTIN (*Essex East*): What year was that?

Mr. HERRIDGE: Page 6 of *Hansard* on December 12, 1962. I read as follows: This is the real reason why the United States will be forever able to take advantage of those routines which we are required to set up under the treaty. Admittedly the treaty runs for 60 years: our obligation, I fear, will run on forever.

Mr. MACNABB: What routine is he referring to?

Mr. DAVIS: Is that flood control?

Mr. HERRIDGE: It is dealing with the question of flood control and the life of the dam.

Mr. DAVIS: The protocol speaks for itself.

Mr. MACNABB: There has been a substantial change in the arrangements under which the United States can call upon Canada for flood controls. Calls for flood control under the treaty are set out in three different items.

8,450,000 acre feet of the storage is covered by annex A of the treaty and the operating plan is set down in the treaty. This is flood control operation for which we receive \$64 million in United States funds and only lasts for 60 years. The second item is additional flood control again during the period of the treaty for which we will receive payment for the first four calls and all power losses for any of these additional calls. The operation of this last item is not covered by the annex of the treaty. This is to provide flood control if needed as long as the Canadian storages are there. This has been substantially altered by the protocol. The treaty said, we would operate for flood control needs. It did not say how that need was to be determined. The protocol in item I sets down very specific limitations as to what constitutes a need and also gives Canadian authorities the right to have a say in determining whether the need for flood control actually exists. So there has been a very substantial change in flood control procedure, and particularly in respect of flood control provided after the termination of the treaty.

Mr. MACDONALD: Mr. MacNabb, I want to refer again to the question of the use of storage at High Arrow as opposed to the use of it further upstream, and in respect of the question of how high the storage should be in Canada. As I understood you to say in your earlier remarks, the chief value of High Arrow in the co-operative plan was that it gave Canada the opportunity of re-regulating after the flows had been used to their best advantage in Canada. In other words, the upstream storage could be used for maximum power generation, and then in order to deliver the water into the United States it could be re-regulated at High Arrow. Is that a fair statement?

Mr. MACNABB: That is correct. I do not believe I said this was the chief value. For example, the benefit cost ratio of 1.8 to 1, when we come to High Arrow, is based solely on its downstream benefit production, not on its value to Canada for re-regulating flows. Certainly this re-regulating service is of great benefit to Canada, permitting us to go into the co-operative arrangement and still protect our rights of operation within Canada itself.

Mr. MACDONALD: Has there been any calculation made regarding the extent to which the generation at Mica down to Revelstoke may be affected by existing control system flows at the border?

Mr. MACNABB: There have been a number of studies made. Montreal Engineering did a study for us in 1962, I believe. It has been studied by Sir

Alexander Gibb, and Merz and McLennan and also by Casco Consultants. It has been studied by Montreal Engineering again and the most recent data available on this subject has been provided by that firm. I feel their representatives should comment on this situation.

Mr. MACDONALD: Will the flexibility offered by Article VII(2) of the protocol further maximize this right of possibility of generation at Mica?

Mr. MACNABB: It makes Canada's freedom to operate within the general limitations of the treaty quit explicit, whereas before we had to interpret the treaty to get that right. Now it is set down on paper that we do have the right to withdraw storage from any of our three projects. The United States cannot specify, for example, that it wants so much water taken out of Mica in a certain month. The assured plans cannot dictate from where the water must come. These agreed operating plans only say that under certain stream-flow conditions the over-all system requires the withdrawal of a certain amount of water from some place in Canada. It also gives us freedom of operation on a daily-weekly basis. The protocol has made this quite explicit.

Mr. MACDONALD: So our obligation is really only to deliver so much water at the border, and how we achieve this within Canada is entirely our own decision?

Mr. MACNABB: That is quite true, yes.

Mr. MACDONALD: Thank you very much.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I wonder whether I may be allowed to refer back to some of the replies you gave to questions I asked earlier? You will recall that you suggested if Canada had wished to exercise control of the operations at Libby dam we would have been called upon to make a contribution to that project, is that right?

Mr. MACNABB: That is the usual procedure, sir. If you expect to have a say in the operation of an upstream project in another country that other country in turn expects you to provide it with some of your benefit from that project. Take for example the situation which presently exists on the Pend Oreille river where the United States has 5.6 million acre feet of storage in the system. Canada does not have to pay any downstream benefit for the very large amount of power benefits it gets at the existing Waneta plant or the potential site at Seven Mile in the very short reach which the Pend d'Oreille river flows through Canada. We get these benefits free of charge but in turn we do not have any say as to how that upstream storage in the United States is to be operated. The same condition will apply to Libby.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Perhaps I could direct your attention to section 4 of Article XII. I understood you to say Mr. MacNabb that we were making no contribution to Libby.

Mr. MACNABB: We are making no contribution in the way of downstream benefits. We do not share downstream benefits with the United States.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): But we do make a contribution to the project itself, is that right?

Mr. MACNABB: We are providing 13,700 acres of land in Canada which the Libby project needs for its reservoir.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): And we are preparing it for flooding, is that right?

Mr. MACNABB: That is right. That is our only cost.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Have you had any estimate made of the cost or value of the land that we are providing?

Mr. MACNABB: The estimate of the cost is approximately \$12 million. I believe it was estimated that there might be 2,000 acres of potential arable

land. I am sorry, 2,000 acres of arable land exists, and it is estimated there is perhaps another 1,000 acres of potential arable land involved.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): What value has been placed on that land?

Mr. MACNABB: I am sure that the value of the land is included in the \$12 million.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would it be correct to say that Canada is making a \$12 million contribution to the Libby project?

Mr. MACNABB: Yes, that is its total contribution. In return for that we get approximately 200,000 kilowatt years of energy annually on the Kootenay river in Canada at a very low cost. I am sure this will be of great benefit to that area in Canada.

Mr. DAVIS: What is the magnitude of the downstream power in Canada?

Mr. MACNABB: It is estimated at approximately 200,000 kilowatt years annually.

Mr. DAVIS: What is the cost per unit?

Mr. MACNABB: The cost would be two mills per kilowatt hour or less, including the \$12 million cost.

Mr. DAVIS: Following up this line of questioning, what importance has this in so far as the largest industries of that area are concerned? Is this to be power which can be obtained in the near future or almost immediately, or is this a long time project?

Mr. MACNABB: If the United States proceed on the Libby project I think their planning calls for putting it into operation by about 1972. Of course the west Kootenay area in Canada would get downstream benefits in Canada from the Duncan dam by 1968.

Mr. DAVIS: This power would be available from existing plants; is that right? In other words it would be delivered locally from local plants?

Mr. MACNABB: The benefits from the Duncan project could be produced by existing plants with the addition I believe of a unit at Brilliant. The benefits at Libby would involve the construction of the canal plant project, or a project we refer to as a canal plant, which bypasses the first four plants now existing on the river. The cost I gave previously of two mills per kilowatt hour or less includes the cost of that canal plant plus the \$12 million which has been mentioned for Libby.

Mr. DAVIS: What would the situation be had we alternatively chosen immediately to divert let us say 90 per cent of the flow of the Kootenay into the upper Columbia? Would the power availability be very different in the area of trade?

Mr. MACNABB: It would be very different, sir, because we have nothing to divert to. Until you build the projects on the main stem of the Columbia, any diversion is completely impractical.

Mr. DAVIS: So additional power would have had to come from more distant sources, such as Mica Creek?

Mr. MACNABB: Yes, they could not get the same power delivered in industrial areas at the price they are going to get it under the treaty.

Mr. DAVIS: Switching over to flooding, could you compare in a general way the amount of Canadian territory flooded under the treaty plan as presently envisaged versus the so-called McNaughton plan?

Mr. MACNABB: Some projects are common to both plans. For example, the Mica Creek and the Duncan dams are common to both plans. But if you take the ones which are not common, in the maximum diversion plan, the

Dorr-Bull river-Luxor projects would flood about 86,600 acres of land. Under the treaty plan, Libby would flood 13,700 acres. The estimate for the Arrow lakes is 27,000 acres.

Mr. MARTIN (*Essex East*): May I interject at this point? Perhaps Mr. MacNabb might use the charts to show what this flooding really means.

Mr. MACNABB: We have maps of reservoir areas which show this difference of flooding very accurately, the extra amount of flooding which would be caused by the maximum diversion plan.

Mr. DAVIS: Could you summarize the over-all amount of flooding?

Mr. MACNABB: Under the maximum diversion plan about 50,000 more acres would be flooded than under the treaty plan.

Mr. DAVIS: So the maximum diversion plan floods 86,600 Canadian acres, and the treaty plan floods approximately 41,000?

Mr. MACNABB: That is correct.

Mr. DAVIS: So that one floods more than twice the other?

Mr. MACNABB: And also, of course, if you proceed with the maximum diversion plan you must assume that you would build the Murphy Creek project, which involves, I believe, another 5,000 acres.

Mr. DAVIS: So that clearly the McNaughton plan floods more than twice as much Canadian territory as the treaty plan?

Mr. MACNABB: Yes, if you look at the projects which are not common to both plans.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. MacNabb, are you familiar with the report of the Department of Agriculture with regard to the effect of the McNaughton plan?

Mr. MACNABB: Yes, sir, I am.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): The estimates there showed that there would be an additional 300,000 acres of arable land brought into the scope.

Mr. MACNABB: If you like, I can read that report to the committee. It is just a one page memorandum.

Mr. TURNER: Mr. Chairman, on a point of order, I wonder whether perhaps the witness could explain the comparative flooding situation, and then we could get on to the report of the Department of Agriculture.

The CHAIRMAN: Yes. I take it Mr. MacNabb is still being questioned by Mr. Davis. I do not want to cut anybody off.

Mr. MACNABB: We could have seen these maps better in the other committee room, but these two charts together represent the flooding in the East Kootenay valley caused by the maximum diversion plan.

Mr. DAVIS: Could someone indicate here where that is on this map?

Mr. MACNABB: Mr. Chin will do that. The dam on the Kootenay river closest to the United States border is the Dorr dam. It floods the area marked in red, stretching upstream, going off this map, continuing on this one, up to the dam at Bull river. The flooding of the Bull river dam continues up the Kootenay valley. The width of this flooding at times is about three to four miles, right up the Kootenay. This flooding continues up the Kootenay valley until you come to the Canal Flats area where the Kootenay river flows within about a mile of the headwaters of the Columbia. It floods right across the Canals Flats area, around the shores of the Columbia lake, between Columbia lake and Windermere lake, around the shores of Windermere lake and down the Columbia, until it comes to the last dam at Luxor on the Columbia.

Mr. DAVIS: In other words, the maximum diversion plan would flood all the way to the boundary, up to where the transcontinental railways and highways tend to come across.

Mr. MACNABB: Not that far up the Columbia. It floods up the Columbia, past Windermere lake and down towards Golden.

Mr. CADIEUX (*Terrebonne*): How many miles south of Golden?

Mr. MACNABB: It might be about 50 miles south of Golden.

Mr. DAVIS: What is the total stretch of flooding?

Mr. MACNABB: One hundred and fifty river miles of flooding.

Mr. DAVIS: That is a mountain trench with little gradient.

Mr. MACNABB: Yes, a very wide, "U"-shaped valley which accounts for the large area of flooding.

Mr. DAVIS: And which contains a major highway and railway system.

Mr. MACNABB: The railway follows the river very closely throughout most of the stretch.

Mr. DAVIS: Which is a major recreation and tourist area.

Mr. MACNABB: We can show this later in the submissions to the committee, but particularly the Windermere lakes area is quite a flourishing recreational centre.

Mr. DAVIS: Would many people be involved in this flooding; would many people have to be moved?

Mr. MACNABB: I can only base my estimates on the studies that the water resources branch did in 1957 and 1958. I believe our estimate at that time of the people displaced was 1,580 compared to 1,620 in the Arrow lakes valley. Both those figures have changed since then, of course, but this will give you the relative numbers.

Mr. DAVIS: Many more acres would be involved, but a comparable number of people might have to be moved.

Mr. MACNABB: That is correct. This represents 86,600 acres.

Mr. DEACHMAN: Mr. Chairman, I have a supplementary question. Do you have any information on the disturbance of game in that area?

Mr. MACNABB: Yes, we have information. Some of it is set out in the presentation paper. You will see it on page 44. We have a submission from the regional game officer of the British Columbia department of recreation and conservation which we can make available to the committee, and the chief of the Canadian wildlife service is also available to testify to the committee if it so wishes.

Mr. HERRIDGE: Have you got a submission from the wildlife service of British Columbia as to the destruction of fish in the Arrow lakes and the Columbia river?

Mr. MACNABB: A report is in the hands of the provincial government. You would have to ask them, sir.

Mr. HERRIDGE: Has there been a thorough analysis of this valley made available?

Mr. MACNABB: Definitely. I think it is also in the presentation paper.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Could you read the report we asked for?

The CHAIRMAN: I wonder if we could have a little order. I do not want to cut anyone off.

Mr. MACNABB: In comparison with this land flooded by the maximum diversion plan, 13,700 acres are flooded by the Libby in Canada. Once again,

here is the international boundary, and the flooding extends upstream just about to the site of what would be the Bull river dam. You can compare the flooding in the Kootenay valley between that chart of the treaty plan as opposed to these two under the maximum diversion.

If we look at the Arrow lakes on the same basis, the Arrow lakes dam is down here, at the outlet of the lakes, upstream from Castlegar. It floods up the lower Arrow lakes, it would flood the community of Renata built on an alluvial fan, up the lower lake and into what they call the narrows between the two lakes, and up into the upper lake. This is Naksup; then up the shores of the upper lake, and then up the Columbia river valley itself where most of the flooding really takes place, between the upper end of upper Arrow lake and up the Columbia valley to the community of Revelstoke.

The area flooded there by the reservoir depends on what elevation you take for the lake in its natural state. If you take the elevation of the lake in the dead of winter at its minimum level and compare that with the elevation of the reservoir, you are of course going to get a higher figure. Again, if you take the elevation of the lake at its peak flood under natural conditions and compare that with the land flooded by the reservoir, you will get a very low figure. What we have done is to take the average elevation during the growing season. We felt this was representative; and the land flooded above that elevation is about 27,000 acres.

Mr. HERRIDGE: Of good land.

Mr. MACNABB: We have a report by the Department of Agriculture and the representative of the Department of Agriculture is here if you wish to hear him comment on the soil aspects of this area.

Mr. TURNER: I wonder if there is any possibility of having the charts photographed and produced as an appendix to the minutes of the proceedings. If it is too difficult I would let it go, but it would be a convenience to those people reading the minutes.

The CHAIRMAN: Can this be done?

Mr. MACNABB: It can be done. I have one, I believe, we would have to make some more.

The CHAIRMAN: Is that the wish of the committee?

Agreed.

Mr. GROOS: Can they be photographed on the same scale?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Before we move on, Mr. Chairman, I wonder if Mr. MacNabb would do as he offered to do a little while ago—read the report?

Mr. MACNABB: Yes.

Mr. PUGH: Can you tell us the elevation of the highest level of flooding in the High Arrow project? What is the maximum flood level?

Mr. MACNABB: In normal operation it will be an elevation of 1,444. In the extreme flood control operation it would go up to 1,446. I believe the British Columbia Hydro can give you further information.

Mr. DAVIS: What has been the highest level in natural flood?

Mr. MACNABB: I think the estimate for the flood of 1894 was 1,415 in the upper lake. In the 1948 flood I believe it was 1,408.

Mr. WILLOUGHBY: Have you similar maps for the flooded areas that will be caused by the Mica dam?

Mr. MACNABB: We have maps, but not mounted in this way because we felt that Mica was common to all plans which are being discussed. These are the two which people seem to feel are alternatives.

Mr. WILLOUGHBY: I recognize that. I only asked that question because I wondered how far the Canoe river is flooded. How high up does that go?

Mr. MACNABB: The elevation would be 2,475. I would have to ask someone to pick off the distance the flooding would go up the Canoe valley.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): It goes pretty well up to the North Thompson crossing of the Canoe valley?

Mr. MACNABB: Yes, it goes a considerable distance up the Canoe valley.

(Translation)

Mr. LAPRISE: In the flooded terrain, to what extent have we communities and houses and dwellings, and things like that?

(Text)

Mr. MACNABB: In both areas there are communities which will be flooded out. In the east Kootenay valley, as I say, the railway follows the valley and the river very closely, and there are small communities all the way along. Most of the dislocation would take place around Windermere lake and the communities of Invermere, Athalmer and Windermere. In the Arrow lakes there is some flooding in the communities of Renata, Edgewood and Needles. There would be a very small amount of flooding at the community of Naksup, but most of Nakusup is well above.

Mr. HERRIDGE: What about Burton, West Demers and East Demers?

Mr. MACNABB: There are small communities that will be flooded in both plans.

(Translation)

Mr. LAPRISE: Have the values been worked out?

(Text)

Mr. MACNABB: Yes, we did some study in 1958 and British Columbia hydro have done more recent work. I think we should limit ourselves to the estimates which we are using now.

Mr. PUGH: Have these been made public?

Mr. MACNABB: I cannot answer that, sir; I think that is a question you should put to them.

The CHAIRMAN: The British Columbia representatives will be here on Monday.

Mr. MARTIN (*Essex East*): I do not think they have been made public.

Mr. PUGH: I was just wondering if they were or not.

Mr. MACDONALD: Following on Dr. Willoughby's question about the Mica reservoir, would it be a correct generalization relevant to these two areas that there is little settled or cleared land involved in the Mica reservoir?

Mr. MACNABB: There is very little cleared land in the Mica reservoir. The flooding of Mica involves areas even greater than the east Kootenay projects. I believe 100,000 acres would be flooded by Mica. Our estimate in 1958 indicated there were 10 people in that area.

Mr. MACDONALD: And this is substantially in its natural state?

Mr. PUGH: Will the land above Mica be cleared of timber prior to the construction?

Mr. MACNABB: This again is a question you should direct to the British Columbia hydro and power authority officials when they testify.

Mr. PUGH: That is not part of the Columbia river treaty or of the dam preparation?

Mr. MACNABB: Yes.

Mr. PUGH: Have you knowledge of it?

Mr. MACNABB: Of the amount of clearing?

Mr. PUGH: Yes.

Mr. MACNABB: I know what we assumed in our earlier studies. I have some indication of what British Columbia is assuming in their recent cost estimates.

Mr. PUGH: Do you know if they intend to clear out the timber first, before flooding?

Mr. MACNABB: Once again, I believe the minister of the department concerned will be here early next week to testify, and he should be able to answer that better than I.

Mr. PUGH: Have you any knowledge of merchantable timber in that area?

Mr. MACNABB: Yes. In our estimates in 1958 there was a survey made for us by the forest service. There is a lot of over-mature timber there, but there is some timber which can be cut and sold.

The CHAIRMAN: May I intervene? Did I hear the suggestion a few moments ago that Mr. MacNabb be assisted by someone from the Department of Agriculture who was here?

Mr. MACNABB: There was a request that I should read this one-page memorandum on the effect of the flooding in the east Kootenay. We have a number of copies of this and they can be distributed to the committee. We also have a number of copies of the Department of Agriculture's report on the Arrow lakes valley which can be distributed. If there are questions on this, we have a representative of the Department of Agriculture here who can answer questions.

The CHAIRMAN: Perhaps he would come forward at this time.

Mr. MACNABB: I will read this while copies are being distributed. This is on the east Kootenay valley and it is entitled "Memorandum re Effect on Agriculture of Construction of Reservoirs on Columbia and Kootenay rivers between Luxor and Dorr". It states:

The building of a reservoir on the Kootenay and Columbia rivers from Luxor south to the Dorr damsite would flood some 91,000 acres of land. Of this, 24,000 acres, if reclaimed, is arable without irrigation, but only some 2,800 acres of river bottom soil, all in the Kootenay basin, are used at present, primarily for the production of tame hay in association with summer cattle grazing on the uplands. About 40 farmers are involved. The remainder of the 24,000 acres would require very costly reclamation to make it usable.

There are also some 26,000 acres of land in the flooded area with some agricultural potential if irrigation could be provided. The availability and cost of utilizing water from the Kootenay, however, makes this virtually impractical for the low priced crops which could be raised in the area.

In comparison to this there are some 300,000 acres of land in the area, above the level of the reservoir, which is as potentially arable with irrigation as the 26,000 acres in the reservoir area. If the reservoir water could be provided for irrigation the reservoir, in fact, increases the agricultural potential of the area.

In other words these 300,000 acres would have some agricultural potential if irrigation could be provided and could raise low priced crops. I continue:

If the building of the reservoir resulted in the control of flooding of the Columbia above Luxor an additional 20,000 to 30,000 acres of arable land in the Columbia flats, which cannot now be used because of flooding, could be made available.

Now, that is the end of the quotation. Just on that last point about the Columbia flats, there might be a certain amount of conflict between the agricultural potential of it and its present potential for water fowl. It is said to be one of the best areas for water fowl in British Columbia.

Mr. BYRNE: Some critics of the treaty say that in the event of a maximum diversion which would flood the entire east Kootenay, 300,000 acres of land would become available. Is that not also true if the land would still be available?

Mr. MACNABB: It is available now, but if you build a reservoir in the east Kootenay, you raise the level of water, and the water needed for irrigation is closer to the potential.

Mr. BYRNE: How much closer?

Mr. MACNABB: By about a hundred feet on the Kootenay. The land has some agricultural potential if irrigation could be provided. I do not believe there have been any studies made to indicate whether or not they could develop the land economically.

Mr. BYRNE: What is the total?

Mr. MACNABB: It would depend. I think the Department of Agriculture could comment better on this than I. But there is a very limited amount of land within 50 feet; and if you need to pump over 50 feet, you would need very low cost power to get it up there economically. It does not say how high you would need to lift the water even from the maximum diversion plan.

Mr. DAVIS: The mountain trench is a valley in the Rockies high up. What elevation has it?

Mr. MACNABB: Around 2,500 feet. Of course the elevations vary, and the elevation of the reservoir would be 2,700 feet.

Mr. DAVIS: This is high up in the Rockies?

Mr. MACNABB: Yes.

Mr. DAVIS: The Arrow lakes would be lower down.

Mr. MACNABB: It is down around an elevation of 1,400 feet.

Mr. HERRIDGE: Sixty-seven thousand dollars worth of fruit per one hundred acres at Renata would be destroyed.

The CHAIRMAN: Is that remark addressed to the press?

Mr. MARTIN (*Essex East*): That is *obiter dicta*.

Mr. MACNABB: You have an agricultural report on the Arrow lakes valley in front of you now. We quoted certain sections out of that at page 71 of the presentation paper.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Could you give us the altitude of the lake that would be formed by the east Kootenay flooding that we have been speaking of.

Mr. MACNABB: It would vary—from the Bull river dam north it would be 2,703 and the Dorr dam is at 2,513, I believe. You know the Arrow lakes one is at 1,446.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes, I know the Arrow lakes one.

The CHAIRMAN: You have received this submission from the Department of Agriculture. Perhaps if representatives from the department would join Mr. MacNabb, there might be a few questions asked before we adjourn for orders of the day.

Mr. MACNABB: Dr. Andal of the economics division and Dr. Leahey are here.

Mr. PUGH: Can we still question Mr. MacNabb?

The CHAIRMAN: We hope to have Mr. MacNabb with us continuously, Mr. Pugh.

Mr. BREWIN: You are not forgetting that we have not finished questioning the minister.

The CHAIRMAN: Mr. Martin has to prepare for orders of the day, but he will be with us again. He was suggesting that we meet at three p.m. Is that too early? All right, three p.m., and he will be with us then.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Will Mr. Martin be available then?

The CHAIRMAN: I hope he will. Are there any questions on the agricultural aspects?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Might we be given their names and technical qualifications?

The CHAIRMAN: Before that do I understand that these documents which have been distributed will now be incorporated as part of our minutes?

Agreed to.

Now, Mr. Herridge.

Mr. HERRIDGE: I was asking the gentlemen to give us their technical qualifications and experience.

Dr. M. E. ANDAL (*Associate Director, Economics Division, Department of Agriculture*): My name is Andal, and I am presently associate director of the economics division of the Department of Agriculture. I graduated in agriculture from the University of Saskatchewan in 1944 in agricultural economics. I have a master's degree in agricultural economics from the University of Saskatchewan, received in 1947. I also have my Ph.D. in agricultural economics from Michigan State University, in 1954. I joined the Department of Agriculture in 1944, and until 1952 I was located at Saskatoon. At that time I left for Ottawa and I have been with the department here since.

The CHAIRMAN: Are there any questions?

Mr. TURNER: Perhaps the other gentleman would introduce himself as well, to save time.

Dr. A. LEAHEY (*Associate Director, (Pedology) Branch Executive, Department of Agriculture*): My name is Leahey, and I am co-ordinator of soil surveys in Canada, a position I have held for about 20 years. I am a graduate of the University of Alberta and the University of Wisconsin, and I have been associated with soil survey fairly closely since about 1926.

The CHAIRMAN: Would you please indicate your work in the United States? It was for graduate studies?

Mr. LEAHEY: Yes, I obtained my Ph.D. degree at the University of Wisconsin.

The CHAIRMAN: May we start the questioning, gentlemen?

Mr. DAVIS: Would either of these gentlemen like to compare the west Kootenay with the east Kootenay valleys with respect to agricultural capability, mainly the mountain trench on the one hand, and the Arrow lakes valley on the other, and the different nature of agricultural possibilities in these two alternative areas for flooding?

Mr. ANDAL: I have some responsibility for this report on the Arrow lakes area, while Dr. Leahey is familiar with the area in the east Kootenays. Perhaps we could each talk about it.

Now, in the Arrow lakes area in this report which you now have in front of you we used aerial photographs to determine the land use in the area. The aerial photographs give a measure of the acreages quite accurately down to one half acre, so that the acreages would be quite accurate. This review of

aerial photographs showed there were about 200 acres of orchard land in the Arrow lakes area that would be flooded by the Arrow dam.

Mr. HERRIDGE: Have you visited the valley?

Mr. ANDAL: I have not personally.

Mr. HERRIDGE: That statement is absolutely incorrect. I will prove it through the district agricultural lists later in these hearings.

Mr. ANDAL: Our regional head for British Columbia assisted in the preparation of this report, and he, of course, has been in the area.

Forty-three acres were shown as idle orchard land in the area, and 4,850 acres as other crop land; idle other crop land, 390 acres; aquatic hay and pasture, 372 acres. The isolated land above the 1,460 level which would become isolated because of flooding would be another 40 acres. The total would be 5,893 acres of farm land flooded.

The rest of the land also was examined to determine the possible potential of land which is not now in agriculture. This is shown in table 6 on page 9: unimproved land, 719 acres; lightly wooded, 1,398 acres; heavily wooded, 10,573 acres. Then there are smaller acreages of land which would become isolated but not flooded above the 1,460 level. Thus, the total acreage which physically could have some potential for agriculture purposes would not exceed 21,900 acres.

It was our view, considering a larger part of this was heavily wooded which would have high clearing and breaking costs, that a more realistic figure for agricultural potential would be considerably below the 21,900 acres.

The CHAIRMAN: Dr. Leahey.

Mr. LEAHEY: I can only speak with a little authority in respect of the east Kootenay because any statistics I quote come from two reports of surveys carried out by the British Columbia soil survey branch. I was an adviser on the project. I have only seen the Columbia at Revelstoke and Castlegar, so I am no authority on the Arrow lakes project. Our studies have been in respect of the effect of the reservoirs of the so-called McNaughton scheme on the agriculture in the Kootenays. We reached the conclusion that the short time effect would, of course, be serious. There are many farms which would be dislocated, particularly along the bottom lands where they depend on their winter feed for grazing. This would knock them out of business. In the long time effect, however, we believe agriculture would benefit particularly if they have cheap power. This is a long reservoir which would raise the water level, and you would be able to irrigate along the shores, and when power becomes cheaper you could irrigate farther back.

By controlling the water of the Columbia, we think it would be feasible to reclaim the good land that presently is flooded in the upper Columbia; but there we may be in a quarrel with the wildlife people and it may be more advantageous to leave it for wildlife since it is a very popular area. The type of crops which can be grown in this area are competitive with those on the prairies—alfalfa grain and potatoes. It is too cold for fruit production in the Kootenays. We would think that perhaps in 50 or 60 years it could be developed for these crops on an economical basis. I think the total area we mapped was around 800,000 acres, and we went up to the foot of the mountains. Some of the land still would be at an elevation of 200 or 300 feet above the reservoir, and the economics of that we have not considered.

Mr. DAVIS: We were told earlier that these various diversion possibilities which will permit flooding under the treaty might occur in 60 years time. This would be in line with what you say about the agricultural possibilities being some distance off.

Mr. LEAHEY: It is some distance off. I would hesitate to say the time. It would depend on the economic pressures.

Mr. DAVIS: In another 50 years the economic pressure might be there to make these projects feasible.

Mr. LEAHEY: Yes.

Mr. MACDONALD: You did not take into consideration moving the highway and the railroad in this area?

Mr. LEAHEY: No. We thought it was an engineering possibility to move the railroad. Some of it presently would be almost above the reservoir. The railroad could be moved, but there is not a great deal of traffic on that railroad at the present time.

Mr. MACDONALD: How about the highway in the valley itself?

Mr. LEAHEY: Some of the highway would be above the reservoir.

Mr. BYRNE: I wonder whether the witness is aware that that railroad presently is being used for all of the freight that moves from the west Kootenay and southeastern part of British Columbia and the southwestern part of Alberta.

Mr. LEAHEY: No. All I am going by is what I was told while I was on a trip through there last summer.

Mr. BYRNE: All of the coal that is going to Japan from Alberta and our shipments of wheat in that area, instead of going over to Kettle valley, are going over that main line.

Mr. LEAHEY: Would you agree it might be possible to move the railroad?

Mr. BYRNE: Not if you wish to have the same economic situation. The present situation is that it follows the river bed from Cranbrook 150 miles north to Golden, and one diesel unit will take a train a mile and a half long. These are the economics of that railroad which has meant the better movement. It is much cheaper than going through the Kettle valley.

Mr. LEAHEY: We did not consider transportation.

Mr. BYRNE: I am sure you did not. I assume that would not be part of your work.

Mr. HERRIDGE: In respect of the Arrow lakes district I presume you have not visited the area personally.

Mr. ANDAL: No, not personally.

Mr. HERRIDGE: And, there has been no on-site soil surveys made of the area.

Mr. LEAHEY: As far as I am aware, that is correct.

Mr. HERRIDGE: And, mention was made of 100 acres of trees in orchard; there must be some mistake there.

Mr. ANDAL: Two hundred acres.

Mr. HERRIDGE: The reason I made that statement is there are 100 acres at Renata alone.

I speak with a little knowledge of the valley. I am a rancher there. I am not personally affected by this flooding; my problems are above that level entirely. But, I would like to say the land is particularly fertile. There are only three areas in Canada where you grow peaches, the Niagara peninsula, the south Okanagan and south Arrow lakes. That is why I mentioned the high production of fruit in the community of Renata. This area would be practically completely flooded out by the dam.

Mention was made that the land is heavily wooded and so on. There is a very high land value in this area. I am thinking of one person who is at lake level who will be completely flooded out. He has 9 acres in crop and he

receives \$15,000 a year gross from this. As I say, this is particularly valuable land because of the type of climate.

Has any consideration been given in respect of making a closer study of the value of this land?

Mr. ANDAL: Yes. Some additional work has been done since the preparation of the report which you now have before you.

We obtained information from the 1961 census for farms in the area.

The CHAIRMAN: Gentlemen, would you please come to order for a minute.

Mr. ANDAL: From the census information it was not possible to determine precisely which of the census farms was in the flooded areas and which was not, but the information here is for 105 farms in the Arrow lakes area, and this confirmed the earlier information about acreages.

This census information showed there were 210 acres of tree fruits in this area.

Mr. HERRIDGE: Who took that census?

Mr. ANDAL: This is from the dominion bureau of statistics decennial census, 1961.

The CHAIRMAN: Have you a question, Mr. Cadieux?

Mr. CADIEUX (*Terrebonne*): Although I do not want to delay the proceedings I would like to refer to page 10 of the report that was given to us and revert to the problem of dislocation. I note in this report that you say there is a possibility that 260 farms or farmers would be displaced and that out of these 260 it would appear that 215 of these farms would have an acreage from one to 30 acres. Would you say that a farm having from one to 30 acres is a self supporting farm?

Mr. ANDAL: Generally speaking, not unless it is in high value fruit production, and there are not many farms in this category.

Mr. CADIEUX (*Terrebonne*): Then in respect of economics it is not that serious. Have you information in respect of the actual losses to these people in respect of these dislocations?

Mr. ANDAL: The 1961 census shows some information on this.

Of 105 farms in this survey, 70 had a gross income from the sale of farm products of less than \$1,200; three of them had gross sales of farm products amounting to more than \$10,000, and the rest were in between those categories.

Since writing the report you now have the Department of Agriculture itself conducted a survey in the area, and the departmental staff was able to find 41 commercial farms. This survey was conducted by means of a questionnaire, completed by farmers and, with the result of this questionnaire, plus some additional information from 10 more farms, this seemed to cover nearly all of the commercial agriculture in the area.

Mr. PUGH: What is meant by the words "commercial self-supporting"?

Mr. ANDAL: Farms that are producing products for sale.

Mr. PUGH: You mentioned three of them had gross sales of farm products amounting to more than \$10,000 and then you mentioned 10 more.

Mr. ANDAL: There were 10 more farms which were not included in this tabulation.

Mr. DAVIS: Did you say three had a gross revenue of more than \$10,000?

Mr. ANDAL: Yes. That was from the 1961 census.

Mr. DAVIS: Only three?

Mr. ANDAL: Yes, and then there were three with no information, and I do not know what category they might fall in.

The Department of Agriculture survey, which included 41 farms with the detailed information, showed 20 farms with less than \$1,200 in farm sales;

eight with \$1,200 to \$2,500; two with \$10,000 and over, and one with no information, so that this one could be \$10,000 and over.

Mr. PUGH: When you mention sales is that the gross?

Mr. ANDAL: Gross sales.

Mr. DAVIS: The total revenue?

Mr. PUGH: The total revenue but there are no expenses in that.

Mr. ANDAL: The expenses have not been taken into consideration. These are the sales of farm products.

Mr. DAVIS: Revenue from all products?

Mr. ANDAL: Farm products.

Many of these are part time farmers who work in forestry or some other operation, as a result of which they obtain a good deal of income from these other operations.

Mr. MACDONALD: Mr. Chairman, could we adjourn and ask Dr. And al to come back?

Some hon. MEMBERS: Agreed.

AFTERNOON SESSION

FRIDAY, April 10, 1964.

The CHAIRMAN: Gentlemen, I see a quorum and will call the meeting to order.

Mr. PATTERSON: Mr. Chairman, I should just like to raise a question this afternoon which possibly is a point of order. As we are all aware this committee sat this morning at 9 o'clock until 11 and then we proceeded to the chamber for the opening of the session in the House of Commons. At that time there was a motion introduced appointing the hon. member for Kootenay East to the committee on external affairs. We will remember in the course of our discussions here the hon. member participating in those discussions and apparently at that time he was not a member of the committee. I only raise this point because I feel there should be some explanation on the record in the event this matter is referred to at some later date.

Mr. RYAN: Mr. Chairman, this is a very technical committee.

The CHAIRMAN: Mr. Patterson, I thank you for your courtesy in bringing this to my attention just prior to the meeting this morning. I recognized Mr. Byrne this morning, as you will recall, who I thought always had been a member of the external affairs committee. At the conclusion of his questions, and I think there was a series of approximately three, the clerk of our committee, Miss Ballantine, was kind enough to indicate to me that she thought Mr. Byrne had been replaced, upon a motion in the house, by Mr. Ron Basford who was not present this morning. Of course I would not have recognized Mr. Byrne had I known the situation. It is clear that we had a good attendance this morning, far more than a quorum. I am in the hands of this committee in respect of any suggestion to rectify this situation.

Mr. PATTERSON: Mr. Chairman, I do not believe there is any way or need to rectify the situation but I felt there should be an explanation on the record in the event this situation is referred to at a later date by someone who was not a member of the committee.

Mr. HERRIDGE: Mr. Chairman, I am sure Mr. Byrne is willing to apologize to the committee for what I am sure was an oversight on his part.

Mr. BYRNE: Yes, I would be delighted to give a complete explanation. As I have noted, on Wednesday afternoon I was called upon by the Minister of Labour to go out to Edmonton to attend a meeting as speaker of the labour management co-operative council which was held in Edmonton. There were about 300 delegates in attendance, all union and management representatives. The Minister of Labour was unable to attend this meeting and he asked me to do so in his absence.

During my absence our party whip, realizing the importance of this committee and the fact that it was deliberating continuously, did not want to leave it shorthanded and put Mr. Basford on the committee to replace me. This morning I was under the impression that that had not actually happened and as a result of that understanding attended the meeting this morning and made one or two observations. The statements I made were of a factual nature and I believe the record when it is printed will support my statement in this regard. I do not believe there is any need to have them withdrawn or stricken from the record.

I am now a member of this committee.

Mr. GELBER: Mr. Chairman, in view of the fact that they were observations and not diversions we can tolerate them.

Mr. LEBOE: I suggest we leave the matter as it stands, Mr. Chairman.

Mr. BYRNE: This was a complete inadvertence on my part for which I apologize.

The CHAIRMAN: Mr. Leboe, having received this sincere and modest apology from Mr. Byrne I think we can now leave the situation.

Mr. PATTERSON: The emphasis should be placed on "modest".

The CHAIRMAN: Perhaps we should all be a little more careful to avoid repeating this error in the future, because I have noticed there is a good deal of shifting from time to time to meet the requirements of this committee. I would be very grateful indeed if we can avoid repeating this error by allowing temporary replacement members from participating.

Prior to our adjournment before orders of the day we had met two gentlemen from the Department of Agriculture. As I understand the situation, these gentlemen are prepared to answer questions relating to agricultural losses or changes which would result from these proposed plans.

Mr. MACDONALD: Mr. Chairman, I should like to address several questions to Dr. Andal. Just to refresh our memories, I should state that my understanding is that a portion of the department's studies was based on photogrammetric interpretations from aerial photographs; is that right?

Mr. ANDAL: Yes. The estimates of acreages in the reports which were passed out this morning were based on air photo interpretations.

Mr. MACDONALD: Is this a very common method used in evaluating land use particularly in country areas?

Mr. ANDAL: Yes, this method is quite commonly used. We have an officer in our department now on the staff, who for 20 years has carried on this type of work. I believe the Prairie Farm Rehabilitation Act officials use air photographs to a considerable degree. We have used this method in respect of various studies that we have undertaken.

Mr. MACDONALD: I understand that in addition to this method the regional director of the department and his staff have been on the ground since conducting their own survey?

Mr. ANDAL: Yes. The economics division of the department has an office in British Columbia. The staff from that office has been in the area interviewing the farmers to get up to date information in respect of the situation.

Mr. MACDONALD: I understand the 1961 census return also provided information in respect of the development in the area; is that right?

Mr. ANDAL: The 1961 census covered all of Canada and it included this area. Since the report was prepared this information has become available and it confirms the information that is in the report.

Mr. MACDONALD: I had the impression after reading the presentation paper that there had been a drop in land use over the years rather than an expansion, particularly in the west Kootenay area. Can you enlighten us in that regard?

Mr. ANDAL: There have been quite a number of reports referring to the decline in agriculture in the Kootenay-Arrow lakes area. One of the most comprehensive reports was the report of the British Columbia royal commission on the tree fruit industry in that province. This report referred to a decline in agriculture in the Kootenay lakes area.

Mr. HERRIDGE: Are you referring to the Kootenay lakes area?

Mr. ANDAL: I refer to the Kootenay-Arrow lakes area. At pages 18 and 19 of the report you will find the following statement:

There were approximately 4,000 acres of orchard in the Kootenay-Arrow lakes district at the outbreak of world war I. Of the 4,000 acres in the Kootenay-Arrow lakes only 290 remained in 1955. Excluding the Creston district there has been a steady decline of production in the Kootenay-Arrow lakes and Boundary districts from 191,000 boxes in 1922 to 12,000 boxes in 1956.

District after district has terminated its effort in tree production.

That is the end of the quotation.

The report also made forecasts of the production for the Kootenay-Arrow lakes area, and based on an average production level, this report, which was published in 1958, forecast 13,000 bushels from this area in 1962. For 1967 they forecast 3,000 bushels. There are also a number of other places in the report where they talk about the decline of agriculture in this particular area.

Mr. MACDONALD: You refer to forecasts, but do you know in fact what the actual result has been?

Mr. ANDAL: I do not have the information on production, but British Columbia Tree Fruits is the central marketing agent for all fruit in that area. I have the information for the last three years on the total volume of commercial grade fruit handled by B.C. Tree Fruits. In 1963 B.C. Tree Fruits handled 2,759 tons of cherries, and 20 of these came from the Arrow lakes area which would be flooded out. B.C. Tree Fruits handled 1,943 tons of apricots in 1963; none of these came from the Arrow lakes area. They handled 9,600 tons of peaches; 1.6 tons came from the Arrow lakes area. They handled over 20,000 tons of pears, and of that just one ton came from the Arrow lakes area.

Mr. BYRNE: Did the others come from Kootenay?

Mr. ANDAL: From other areas of British Columbia, such as the Okanagan area. Other fruit handled by B.C. Tree Fruits were 1.3 tons of prunes from the Arrow lakes area and 19 tons of apples.

Mr. MACDONALD: This appears to indicate a long run decline in the area. Have you been able to form any judgment on what are the causes of it?

Mr. ANDAL: There have been a number of reasons given. The royal commission report quoted Mr. Herridge on the reasons for this decline.

Mr. MACDONALD: Is this a reliable report?

Mr. ANDAL: The decline was attributed to the age of the orchardists, the unwillingness of young men to take over family orchards.

Mr. HERRIDGE: But not to the soil.

Mr. ANDAL: And to neglect and poor horticultural practices. This report and others have referred to fruit diseases in the area; cherry trees became infected with the little cherry disease and brown rot.

Mr. MACDONALD: Is this disease particularly endemic to the province?

Mr. HERRIDGE: I can inform the committee on that point.

The CHAIRMAN: I will ask the committee to stop picking on Mr. Herridge.

Mr. ANDAL: The royal commission report states that precipitation in the Kootenays gives the area some of its major problems, that is apple scab and brown rot. Apparently this has been more of a problem in this area than in some of the other areas.

Mr. MACDONALD: Perhaps your colleague may be the man to deal with my next question. You mentioned, in addition to Arrow lake, the Kootenay lake and the Creston area; were you responsible for examining the possible effects of the treaty in the Creston area?

Mr. ANDAL: No, I was not.

Mr. MACDONALD: Did anyone in the department do it? Did Dr. Leahey make that statement?

Mr. LEAHEY: No.

Mr. ANDAL: This report dealt with the Arrow lake area.

Mr. KINDT: I was wondering if the Department of Agriculture, in their studies of the land flooded by High Arrow and of other flooded areas in the basin, had arrived at an over-all damage factor, a negative value? The flooding of land is obviously a negative benefit, if you want to call it that, which must be deducted from the total benefit calculated for the watershed and for the program that has been put into effect. My question is as follows: Have those negative benefits been deducted from the over-all benefits to arrive at the net cost benefit ratio for the watershed? Have I lost you in my question?

The CHAIRMAN: Mr. Kindt has a Ph.D. in economics.

Mr. KINDT: I will try again. In this particular study, such as in other watershed studies, it is boiled down to the cost benefit ratio, which may be one-one, which means that if there is one dollar spent, they expect to get one dollar back in the way of benefits. All that is computed. Now then, it may be more than one-one; you hope it will always be so in order that people in parliament and at other places might be attracted by the scheme and vote funds to carry it out. It all boils down to the cost benefit ratio. What I wanted to know is as follows: Have those negative values for losses owing to flooding been deducted in order to arrive at the net position?

Mr. ANDAL: The Department of Agriculture did not do this.

Mr. KINDT: Did the engineers do it?

Mr. MACNABB: Mr. Chairman, in estimating the cost of flooding the reservoir, estimates of the cost of the land which will be flooded were included, or the cost of buying that land. In some cases I think it includes the loss of perpetual yield. I am talking about the earlier cost estimates. If you want to know about the present one, this question should be directed to the B.C. Hydro authorities.

Mr. KINDT: Surely this committee is entitled to know what are the negative values of damages that will be incurred to our resources as a result of flooding.

Mr. MACNABB: Yes sir, these estimates were included in the cost estimates that the federal government prepared prior to the negotiations. The new estimates have been carried out by the British Columbia Hydro and Power

Authority, and I think the question should be directed to them; they can say what they have included in their estimates.

Mr. HERRIDGE: Then, Mr. Chairman, I was interested in the witness's reference to the production of fruit on the Arrow lakes. I understand how he arrived at the figures that were supplied; that is the fruit that is shipped through the British Columbia tree fruit board. The figures are astounding because the greater part of peaches, pears and cherries go into the local markets at Nelson and Trail. They are not shipped through Tree Fruits Limited, you see.

Would you give me that figure again? I must get these figures from you because they will be astounding figures for my constituents. What is the figure in respect of pears?

Mr. ANDAL: The tonnage of pears handled by British Columbia Tree Fruits Limited?

Mr. HERRIDGE: It gives the wrong impression. This is all that goes through tree fruits.

Mr. ANDAL: This is not total production. The figure for pears handled by B.C. Tree Fruit from the Arrow lakes area was 0.9 tons for 1963.

Mr. RYAN: I direct the committee's attention to the date of the preliminary report tabled by the present witness. It is dated February, 1962; it is not too current, therefore. However, I would like to read the last paragraph on page 9 under the heading "Total Acreage Affected":

In total, the maximum acreage of land that could be considered as agricultural or potentially agricultural would not exceed 21,900 acres. A more realistic figure after considering the definitions of some of the categories measured, would certainly be considerably lower.

I understand that it was estimated that there would be 20,000 acres flooded in the Arrow lakes project and now that has been reduced to 27,000 acres. Is this figure of 21,000 in relation to the first or second estimate?

Mr. MACNABB: I would say that would be in relation to the second estimate—27,000.

(Translation)

Mr. LAPRISE: Reference has been made to the reduction in the production of fruit. Was this due merely to difficulties in production, or were there any economic difficulties in relation to sales or marketing?

(Text)

Mr. HERRIDGE: The reasons I gave were the correct ones.

Mr. ANDAL: I think, sir, it is probably a combination of both. As new technologies come into agriculture certain areas have difficulty in adjusting. All across Canada there are certain areas being abandoned. Land is going out of use. These areas have not been able to take full advantage of the technological advances. The west Kootenay area of British Columbia is a food deficit area. A large part of the food in the area comes in from outside so they are not required to ship a large part of the food production outside of the area, and it has this advantage in that the area is a deficit food area.

Mr. HERRIDGE: Local markets.

Mr. DAVIS: I also want to direct a question which has to do with agriculture, and it is following up on Dr. Kindt's line of questioning. I think perhaps Mr. MacNabb might prefer to try to answer my question.

On page 138 of the white paper entitled "The Columbia River Treaty Protocol and Related Documents" we see various capital cost estimates, and in the middle of the page under the heading "Capital Costs of Projects" we

see three projects listed, along with the millions of dollars. Opposite Arrow lakes we see \$129.5 millions. Does that capital cost estimate include a provision for the expropriation of agricultural land that may be flooded?

Mr. MACNABB: Yes, sir, of that estimate of \$129.5 million I believe the total cost of providing the reservoir represents about 40 per cent of \$129 million. That is the total cost, the cost of all relocations, all costs associated with the flooding.

Mr. DAVIS: The figure would be something more than \$50 million if it is 40 per cent of the figure.

Mr. MACNABB: That is correct, yes.

Mr. DAVIS: In the benefit:cost ratios that you referred to this morning, costs such as the expropriation of agricultural lands were included, were they not?

Mr. MACNABB: That is correct.

Mr. DAVIS: So when you said the benefit:cost ratio in respect to the Arrow lakes project was of the order of 1.8—I think you said that.

Mr. MACNABB: That is correct.

Mr. DAVIS: The cost of expropriation, and the cost of forgoing that agricultural production, was included as an expenditure item?

Mr. MACNABB: Yes, an estimate of what it would cost.

Mr. DAVIS: So you had a multiplicity of costs, and the power benefit exceeded the costs by roughly two to one?

Mr. MACNABB: That is correct.

Mr. HERRIDGE: I have just another question to ask the agricultural witness. There is a reference here to page 11 saying:

The exceedingly high cost of land clearing in the area, the limited precipitation, making irrigation a requirement for intensive cropping, the susceptibility of the valley to diseases of fruit trees, the presence of many soils of low inherent fertility, and the limited acreage of land, all indicated limited possibilities for the further development of the land for agricultural purposes.

I recognize it is not an extensive area for development of agriculture, but I am interested in this as a fruit grower for 58 years in the Arrow lakes district, a district which can produce high quality fruit, fruit which is shown in fairs in Vancouver and many other places. I am interested in this sentence here which includes the words, "the susceptibility of the valley to diseases of fruit trees". I want to say to the witness that any fruit grower in the Arrow lakes valley who carries out standard spray practices can produce as high quality fruits as people in Okanagan or anywhere else. That is not a sound reason so far as fruit growing is concerned.

Could the witness say where this idea came from? I was asked to raise this by the retired district agriculturalist, who was appalled at this attitude to the potential of the Arrow lakes agriculture.

Mr. ANDAL: There have been a number of references to problems of disease in the area. I mentioned one reference, that of the Royal Commission report on the British Columbia tree fruit industry, page 279, which mentioned that the precipitation of the Kootenays gives the area some of its major problems, that is apple scab and brown rot.

Another study on the physical basis of the orchard industry of British Columbia, carried out by Ralph R. Krueger of the department of geography, University of Waterloo, in discussing the Kootenay-Arrow lakes area states:

The decline of orcharding has been attributed to injury caused by low winter and spring temperatures, poor horticultural practices, neglect of

orchards occasioned by the departure of young farmers for employment in mining, lumbering and construction, and the little cherry disease which first appeared in the 1930's.

Mr. HERRIDGE: In Kootenay lakes.

I cannot agree with that analysis, because we grow peaches in the southern or lower Arrow lakes, and we do not suffer from low temperatures. We have never had any winter kill in our orchards in 58 years. I think it is a bit of a libel on the district I represent.

The CHAIRMAN: Have you any further questions?

Mr. HERRIDGE: No, not at this point, but of Mr. MacNabb, later.

Mr. FLEMING (*Okanagan-Revelstoke*): I want to direct my question to Mr. MacNabb. Have any plans for the co-operative development of the Columbia river basin in British Columbia been studied which would eliminate substantial flooding of the areas now occupied by agriculture or by communities?

Mr. MACNABB: Plans have been studied which would not affect to any material extent agricultural; but these would have to be independent plans which just call for the construction of Mica, Downie creek, and Revelstoke canyon.

Mr. FLEMING (*Okanagan-Revelstoke*): But not co-operative plans?

Mr. MACNABB: No.

Mr. FLEMING (*Okanagan-Revelstoke*): The co-operative plans would not be possible without some portion of British Columbia being flooded where there are agricultural and population centres established?

Mr. MACNABB: That is right. The Arrow lakes project is an essential part of the co-operative plan.

Mr. FLEMING (*Okanagan-Revelstoke*): Extensive flooding would be necessary to any plan to return sufficient benefit to Canada to compensate for such flooding?

Mr. MACNABB: That is correct, yes.

Mr. HERRIDGE: May I ask Mr. MacNabb a question. Could he inform the committee what the cost benefit ratio was when the cost of the High Arrow was established at \$72 million, and what the cost benefit ratio is now?

Mr. MACNABB: Well, the cost now is \$129,000,000.

Mr. MARTIN (*Essex East*): Show Mr. Herridge how you do that.

Mr. MACNABB: It would have to be about three to one rather 1.8 to one.

Mr. HERRIDGE: It has gone up to three to one?

Mr. MACNABB: Under the old estimate it would be about three to one, and under the present estimate it is 1.8 to one.

Mr. DAVIS: That is benefit to cost?

Mr. MACNABB: Yes.

Mr. HERRIDGE: So they narrowed it.

Mr. MACNABB: By about one third, yes.

Mr. HERRIDGE: You have dealt with this problem, fundamentally, from the power production point of view.

Mr. MACNABB: I try to confine myself to engineering aspects, yes.

Mr. HERRIDGE: You have not considered the sociological or human aspects or values?

Mr. MACNABB: That is not my field at all, sir.

Mr. HERRIDGE: A famous engineer addressed the Vancouver board of trade on January 6, 1964.

Mr. MARTIN (*Essex East*): May I suggest that you would not wish to leave the question that way. The witness has answered it very fairly, but we would not want to leave the impression that Mr. MacNabb, who obviously is a very civilized man, does not have an interest in human relations and feelings.

Mr. HERRIDGE: I quite understand that. I realize that Mr. MacNabb is concerned particularly with one aspect rather than with other values. I do not blame him. It is not his fault.

This gentleman addressed the Vancouver board of trade.

An hon. MEMBER: May we have his name, qualifications, education, and so on?

Mr. HERRIDGE: It was Dr. Jack Davis, formerly of the British Columbia Electric, and now a member of parliament for Coast-Capilano. He said:

—the existence of a \$300 million dam at Libby downstream in the U.S., however, would stand in the way of . . . Canada's sovereign right to divert the upper Kootenay. It would constitute a 'vested interest' and politically, would make it difficult for Canada to recapture these flows for its own use.

Do you agree with that statement?

Mr. DAVIS: What was the date of it?

Mr. HERRIDGE: January 6, 1964.

Mr. DAVIS: I never said any such thing as that.

Mr. HERRIDGE: You did not say this?

Mr. DAVIS: No.

Mr. HERRIDGE: The press of Vancouver reported this.

Mr. DAVIS: I spoke to the board of trade on that date but I did not even discuss the Columbia, because it was still under negotiation at the time. Anyway, you may wish to comment on the statement as attributed to me, but I did not make it in that form.

Mr. MACNABB: Once again you ask me for a legal opinion. I would rather stick to the engineering field. However if you want my opinion, the treaty gives us the right to divert. We have the legal right to divert under the Columbia River Treaty, whether the Libby dam is there or not. And if they do not build it, we can divert immediately.

Mr. HERRIDGE: Do you think we would suffer the same experience as was suffered in Ontario when they tried to recapture power upon which communities had been built?

Mr. MACNABB: The United States had a firm contract for that power.

Mr. HERRIDGE: Yes, but the contract expired in 1917. However they tried to recapture it. The government of the United States informed the government of Canada that they would consider it an unfriendly act.

Mr. MACNABB: I do not see that the two things are similar.

Mr. HERRIDGE: They are both a straight return of power to Canada.

Mr. MACNABB: No. One has to do with a diversion right, not the return of power to Canada, but making use of water as British Columbia sees fit.

Mr. HERRIDGE: This is indirectly a return of power as a result of the return of the water.

Mr. MACNABB: Not the return of the water, but just keeping it in our country.

Mr. FLEMING (*Okanagan-Revelstoke*): In 1959-60 in this committee some reference was made by General McNaughton to an intermediate arrow; there was some discussion in those hearings of the possibility of modifying the

extent of flooding in the Arrow lakes, in the event that the treaty imposed a plan. Was study given to the possibility that the area of extent or volume of the Mica creek reservoir might be increased beyond that now contemplated and part of the storage transferred from Arrow lakes to Mica. And if so, was this rejected, or was it studied and rejected because it would not supply sufficient benefit?

Mr. MACNABB: The problem is that you can build and have as big a dam as you like at Mica, but the limiting factor is the amount of water you have to put into it. There is no use in building a monumental structure without having the amount of water necessary to fill it annually. Arrow lakes being below Mica, controls the water flowing in below the Mica dam, a volume of water as large as that at Mica itself. This inflow below Mica cannot be controlled by a higher dam at Mica, it must be controlled in the Arrow Lakes.

Mr. FLEMING (*Okanagan-Revelstoke*): You mean there is as much tributary flow to the Columbia between Mica and Arrows as flows into the Columbia between Mica and its source?

Mr. MACNABB: That is correct.

Mr. MACDONALD: In connection with some reference to power exports in the early part of the century and about the recovering of power exported abroad, we are not recovering our power in the strict sense here, the power generated in Canada. Would it be true to say that with modern technology, with nuclear and thermo plants, and natural gas, that the situation has changed the possibility of generating electric power, and does this not affect the question of the return of power?

Mr. MACNABB: I think that conditions have changed radically but I would have to rely on my recollection of that Niagara falls case. Ontario power was transmitted to industry in Niagara Falls, New York, an industry which was completely dependent on that source for power and had no other alternative. But that condition has changed drastically with the advent of transmission over longer distances, with transmission grids, and this condition no longer applies. There are many alternative sources so that if you do not get it all from one you can get it from another, and by different routes. That is the main reason for the change in the idea of power export.

Mr. BYRNE: Is it not also true that by the termination date of our sales agreement the power generated in the northwestern pacific, as a result of our storage, will be of such a small proportion to the total energy production in that area that there would be no difficulty with the problem of giving it back to us and so on, because there would be no real benefit in any case at that time? Is it not true that there would be no difficulty in returning it to us?

Mr. MACNABB: The proportion is relatively small even now. In the presentation book you will see that it will reduce over the 30 years, if our present estimates are correct. In a way you might say it is self-recapturable.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Have there been any calculations made in respect of the relative volume of down-stream benefits from the figure 9A sequence and the treaty plan?

Mr. MACNABB: Yes. Some have been done quite recently by the Montreal engineering company. They will be testifying on the results of their studies.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You do not have any information?

Mr. MACNABB: They carried it out and I would like them to make the comment.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): When it is estimated that the Mica dam would be economically machined?

Mr. MACNABB: This would depend on future load growth in the province of British Columbia.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Have there been any estimates?

Mr. MACNABB: I would like Dr. Keenleyside to correct me on this, but my understanding is that on the basis of the present estimate it could be approximately 1975 or about one year or two years after the storage dam is completed.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): What will be the annual cost of Mica?

Mr. MARTIN: May I suggest that you refer to the British Columbia-Canada Agreement, clause 16 in which it says:

British Columbia agrees that generators will be installed in the dam at Mica Creek as soon as economically feasible.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I was going to ask a question on that later on. There would be costs at Mica in the period between the construction of the dam and the installation of the generators?

Mr. MACNABB: Yes. You always have the cost of the operation and maintenance of the storage project.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would that be covered by the funds from the Arrow and Duncan projects for this purpose?

Mr. MACNABB: Yes. In the presentation paper we have approached this in two ways. These are explained at page 100. The first one is where we compare the price paid for the downstream benefits against the capital costs of all of the projects—Mica, Duncan and Arrow—and it is on that basis there is a surplus of \$53 million left over.

About the middle of page 100 we say:

A second approach to the value of the payments is to apply them year by year to the cost of constructing and maintaining the treaty storage over the full construction and sales period (1964 to 2003). Under this approach we find that all construction costs are paid as they occur and all operating and maintenance costs of the storage are fully covered. In addition, a revenue surplus of \$40 million remains at the end of the period. Over the full period of construction and sale, the value to Canada of the initial payments plus interest earned on the unused portions of those payments, totals \$488 million.

It goes on:

No matter which approach is used the end result is the full coverage of all treaty costs and with surplus revenues to be applied against Mica generation so that the average cost of the 6.6 billion kilowatt hours of energy produced annually at that site will be less than 1.5 mills per kilowatt hour.

So, it really does not matter which way you treat these because the end result is the same; you get power at Mica at less than 1½ mills.

Mr. DAVIS: Yesterday some reference was made to inflation and the effect it would have on the capital cost of these projects. I think the sources we have have indicated that the capital cost estimate for the High Arrow project has gone up considerably, Duncan lake appreciably and Mica Creek about the same. Are these earth and rock filled structures, and what has been the history and experience in recent years in respect of the cost of building dams of this kind?

Mr. MACNABB: First of all, in the case of Mica it is a rock fill dam; Duncan is earth fill and I believe Arrow is a combination of concrete and fill. In respect

of the price of moving large quantities of rock and earth, I believe this has gone down in recent years because of the advent of large equipment which can do this quite cheaply.

Mr. LEOE: I might add a note on this point to assist the committee. The bids for the Peace river dam were \$23 million lower than what had been estimated. I understand—and Mr. Davis can correct me on this—that one of the reasons for this is the comparatively new idea of using conveyors instead of trucks in connection with moving the material. I think the Peace river dam complex is going to be the largest in the world in so far as a conveyor complex is concerned for handling and moving dirt. Is that correct?

Mr. DAVIS: I understand that.

Mr. KINDT: I would like to return to this question of costs. I think Mr. MacNabb can provide the information. In getting at the areas to be flooded I presume the detail you went through was to planimeter the area for different heights. What were your steps following that, in arriving at the costs of the area that would be flooded? I would like that answer first.

Mr. MACNABB: Again my answer must be limited to the studies which were done for the international Columbia river engineering board in the 1950s where first we estimated the elevation of the reservoir. Then a team went into the reservoir area and estimated the cost of relocating roads and mills and the cost of moving people. That cost was added to the actual cost of constructing the dam itself in order to give us a total cost for the project.

Mr. HERRIDGE: You were going to let us have those totals.

Mr. MACNABB: They are contained in appendices one and two of the report of the international Columbia river engineering board. I can table these with the committee.

The CHAIRMAN: Is that agreed?

Agreed.

Mr. KINDT: Were those costs which were obtained in that way used as the measure of, say, negative benefits in arriving at the cost?

Mr. MACNABB: They do act as a negative benefit.

Mr. KINDT: In other words you deduct the actual value of the land which is to be flooded and use that as your measure of value?

Mr. MACNABB: Yes. In the estimate that was made at that time my understanding is that they went into the area, took sample comparisons of assessed values of buildings and actual sale values of the buildings and used these samples to establish an average comparison between sale value and assessed values for the area. Then, they calculated the sale value, added 20 per cent on that for the forced takage, and used the total figure of 120 per cent of the sale value as the cost of the land and buildings involved.

Mr. KINDT: In other words, the point which Mr. Herridge brought up, namely all these other intangible benefits, was not taken into consideration.

Mr. MACNABB: We tried to where we could. If we felt there was a business which had an annual income of so much a year we worked out the return in respect of what we would have to pay the owner to compensate him for the yield he would have received if he stayed in business. This was done also for the telephone lines and power lines involved. Again, I must comment that these were the very preliminary estimates made during the 1950's.

Mr. KINDT: But, there are both tangible and intangible benefits?

Mr. MACNABB: Yes.

Mr. KINDT: Did you take both of these into consideration when arriving at your costs?

Mr. MACNABB: We tried.

Mr. KINDT: How close did you come to it?

Mr. MACNABB: Well, you tell me what the intangible benefits are and I will tell you.

Mr. KINDT: Mr. Herridge can.

Mr. MACNABB: Well, if there are intangible benefits, I cannot tell you.

Mr. HERRIDGE: Did you consider the flooding of sandy beaches and the tangible benefits of the industrial workers of Trail, British Columbia?

Mr. MACNABB: I cannot put a dollar figure on that.

Mr. BYRNE: Could you make some assessment in respect of the east Kootenays?

Mr. MACNABB: It would depend on the temperature of the water there.

The CHAIRMAN: Order, gentlemen.

Mr. HERRIDGE: On page 68 of the presentation there is a reference in the second paragraph, as follows:

The United States made it clear that "factors not reflected" in the benefit-cost ratio were of great importance to it and that, if Canada would not agree to the Libby storage, it would not agree to first-added position for the Canadian storages unless it got the kind of advantages it knew it could get from Libby.

What is meant by "factors not reflected"?

Mr. MACNABB: In this case it was the physical availability of the project; in other words, Libby was available to the United States in, I believe, six to seven years time or something like that. Now, in respect of Mica, its engineering design still had to come and that plus the actual physical construction was estimated at 9 years. In other words, the Mica dam could not compete with Libby on the actual physical availability; Libby could be completed two years sooner. Now, this must be given consideration when you are considering a potential load which you must meet.

Mr. HERRIDGE: It that what is meant?

Mr. MACNABB: This was the interpretation the United States put on that portion of the International Joint Commission principles.

Mr. KINDT: Mr. MacNabb, could you tell us what rate of interest was used in computing the intangible benefits?

Mr. MACNABB: As I say, sir, the interest used on the cost of the reservoir is the same interest rate used in the project itself, and this is in the report of the international Columbia river engineering board to the International Joint Commission; in other words, they used a 3 per cent interest rate. Present estimates are 5 per cent, and this accounts for a fair amount of the increase in all the estimates made in the 1950's as compared with those made now.

Mr. KINDT: I would like to pin this down. Would you tell us, from the point of view of getting at this, what can be drawn from these figures. Everything depends on the interest rate, you assume—

Mr. MACNABB: Yes.

Mr. KINDT: —to bring this back to a present worth. Now, if you used 3 per cent in one case and 5 per cent in another these benefits would be terrifically distorted under the two methods. I would like to get at just exactly what you did there in order that I may have an understanding of it.

Mr. MACNABB: The 3 per cent interest rate has not been used at all in any of the recent studies; it was used only by the international Columbia river engineering board in the studies which they did in the 1950's. They assumed this rate and they realized that for Canada it was not reasonable. However, they wanted to pick a common interest rate for the United States and Canada so they could compare the projects on an equal basis. Therefore, they assumed a 3 per cent interest rate, even though they realized it was not realistic for the Canadian project. Where we have gone into this in more detail, both during the treaty negotiations and in the latest estimates, we have been using a 5 per cent interest rate for the cost of the projects to Canada. Now—

Mr. KINDT: Just a moment, Mr. MacNabb; we have had three interest rates mentioned in this project. The other day I brought up that question and the figure $4\frac{1}{2}$ per cent was used, when it came to computing what returns the province of British Columbia would get for the project.

Mr. MACNABB: That is correct.

Mr. KINDT: It seemed to be to the interest of those who are figuring it to use $4\frac{1}{2}$ per cent. If they used 4 per cent there would have been another \$25 million or \$50 million going to British Columbia for that project. Now, if they had used, say $3\frac{1}{2}$ per cent, or even gone down to 3 per cent, or taken a twenty year average, which is about $3\frac{1}{2}$ per cent, historically it would have meant another \$100 million or \$150 million going to British Columbia—and British Columbia could use that money.

Now, why do they use $4\frac{1}{2}$ per cent in one case, 3 per cent in another and 5 per cent in another? In other words, they were juggling the interest rates to suit the purpose for which they wanted it to come out. Consequently, they are working backwards and choosing interest rates, and then working from totals back to the individual rather than applying the interest rate to the individuals and working up to the total. However, I do know that is the way these projects are handled.

Mr. MACNABB: I am afraid I cannot agree, sir. Let us get rid of the 3 per cent interest rate first. This has no application at all to the recent studies; it was purely a theoretical interest rate chosen for a particular international study back in the 1950's to try to average out the rate on the United States side to the Canadian side, and has no relation at all to the present studies.

If Canada were to go out now and try to build these projects themselves they would have to raise the money and, in fact, they would be fortunate if they could raise it at 5 per cent interest. But, we did not have to raise that money; this money is being provided by the United States purchaser.

Mr. KINDT: I beg your pardon.

Mr. MACNABB: This money is being provided by the United States purchaser. It is being provided through the sale of the downstream benefits to the United States. The interest rate on which these benefits are based is $4\frac{1}{2}$ per cent, and that is the rate we feel these private utilities will have to pay when they go out to try and raise the money. It is a very large bond issue, about \$330 million. The difference between the \$330 million and the \$254 million paid to Canada must cover the cost of floating the bond issue and the cost of interest on the issue until they start to get some downstream benefits. They are going out to try to raise \$330 million, and we feel the applicable interest rate for that group of utilities is $4\frac{1}{2}$ per cent. So, our payment is discounted on that interest rate, and quite correctly so. If we could have obtained a 4 per cent interest rate it would have increased the lump sum payment by about \$20 million.

And, if you want to go down to 2 per cent, you get a bigger increase. We tried to determine the actual interest rate that it would cost them, and when

you go out to raise money you cannot expect to receive it on the historical interest rates; you must pay the going rate.

Mr. MACNABB: When you go out to raise money you cannot expect to raise it at an historical interest rate, you must do it at the going rate.

Mr. KINDT: I agree with that statement.

Mr. RYAN: Mr. Chairman, perhaps I could ask a question. Is it true in the United States that the hydro people when they want to build a dam or spend money for the capital cost of generating hydro power they are subsidized by the federal government to the extent of some two per cent so that the working interest rate is dropped down in many cases from five per cent to three per cent or from four per cent to two per cent?

Mr. MACNABB: The four and a half per cent rate which the utilities people feel they will have to pay for these bond issues is an income tax free rate. If they had to pay income tax on this issue the rate would be higher. The very low rate of two and a half per cent which I think you may have in mind is a rate used in respect of federal projects.

Mr. RYAN: That is what I had in mind, yes.

Mr. MACNABB: In fact I think this rate is now closer to three per cent. However, I do not feel this bears much relationship to the actual bond market in the United States.

Mr. RYAN: This is a United States situation and is not a Canadian or a British Columbia situation at all?

Mr. MACNABB: That is right and it is limited to federal projects in the United States. Perhaps we should refer now to one further interest rate.

Mr. KINDT: Let us complete our discussion on this one first. You have used three and a half per cent and you are now using five per cent. For discounting purposes in computing the present value of power benefits from downstream sales you are using four and a half per cent. You finally reach a point in time where you must figure the cost benefit ratio; is that right? You have used three per cent in one case for discounting tangible and intangible benefits; is that right?

Mr. MACNABB: No, sir, we have not.

Mr. KINDT: What interest rate was used in relating the benefits from irrigation, flood control and all the other benefits for the 30 to 60 years to the present in discounting the series of incomes that will be derived?

Mr. MACNABB: Are you referring to power benefits within Canada?

Mr. KINDT: We have already dealt with power, and you have said the four and a half per cent rate was used.

Mr. MACNABB: The four and a half per cent rate refers to power sold to the United States, that is right.

Mr. KINDT: What interest rate did you use in respect of all the other benefits?

Mr. MACNABB: Do you refer to power generated in Canada?

Mr. KINDT: Let us not consider power at this time. This is a multiple purpose project.

Mr. MACNABB: Let us consider flood control.

Mr. KINDT: Let us consider flood control, irrigation, recreation and all the other benefits. How do you discount this and relate it to the present, and at what interest rate?

Mr. MACNABB: Let me deal with flood control. The flood control payment by the United States called for by the treaty, being \$64.4 millions, was discounted at three and seven eighths per cent interest. This was an interest rate negotiated

during 1960 and early 1961 under the original treaty negotiations. This is a payment made by the federal government of the United States, and the three and seven eighths per cent rate was their long term borrowing rate at that time. We got the benefit of that payment and the long term borrowing rate of the United States. As I say, in evaluating these projects we have not been able to put a value on recreation, irrigation and other benefits. We have made a provision for irrigation but there is no value put on it. If we were to do that we would use the interest rate applicable in Canada to the British Columbia hydro and power authority.

Mr. KINDT: If you have not placed a value on those benefits in computing the present value you have not reached a position where you have a cost benefit rate for the entire project nor for that portion of the project which is in Canada; is that right?

Mr. MACNABB: We have not included those intangible benefits. We could go out there and assess the irrigation potential for the next 60 years if you like.

Mr. KINDT: That statement answers my question.

Mr. MACNABB: Perhaps I may refer you to page 49 of the presentation paper. Table 2 gives the historic and estimated irrigated areas in thousands of acres in the Kootenay and Columbia basins in Canada. You will see from this table that there has been no growth at all between 1928 and 1960, yet we have assumed in the streamflows that we have used in computing power benefits that there will be a very considerable increase in irrigation by the year 2010, but at what rate it is going to take place and specifically where it is going to take place I just cannot say.

Mr. DAVIS: Mr. MacNabb, following this line of questioning, in evaluating these alternative schemes for developing the upper Columbia you have developed a benefit cost ratio?

Mr. MACNABB: Yes.

Mr. DAVIS: There have been several different studies developing benefit cost ratios?

Mr. MACNABB: That is correct.

Mr. DAVIS: And these different studies have each involved a different rate, or different rates to test the effect of using different rates; is that right?

Mr. MACNABB: To what kind of rates are you referring?

Mr. DAVIS: You have used different rates of interest for discounting purposes?

Mr. MACNABB: Yes, we have used different rates of interest under different conditions.

Mr. DAVIS: In other words you have tested to see whether high or low rates materially alter the situation?

Mr. MACNABB: The lower the interest rate on these bond issues the more help it will be to you.

Mr. DAVIS: I am not discounting money now in the sense of pure revenue. I am talking about both sides, cost and revenue. You must use the same interest rate to discount both costs and revenues?

Mr. MACNABB: That is correct.

Mr. DAVIS: And you must have the entire study internally consistent using only one interest rate?

Mr. MACNABB: Yes.

Mr. DAVIS: This has been the case in respect of all the studies?

Mr. KINDT: No.

Mr. MACNABB: This has been the case in respect of any study carried out within Canada, yes.

When you become involved in selling power to the United States utilities you have to bring in another interest rate.

Mr. DAVIS: I am trying to distinguish between benefit cost studies and the method of deciding which project should be first, second and third related to the monetary position in respect to downstream benefits.

Mr. MACNABB: In all benefit cost studies leading up to negotiations and during negotiations we used a common interest rate for all projects.

Mr. KINDT: I am sorry I did not catch your last two or three words.

Mr. MACNABB: We used a common interest rate.

Mr. KINDT: You used a common interest rate but can you pin it down?

Mr. MACNABB: If the interest rate at the time was five per cent we applied five per cent to all projects.

Mr. KINDT: In other words you have chosen an interest rate which is not consistent. The point referred to by Dr. Davis is legitimate. There was not one particular interest rate used but a series of interest rates from time to time, so that when you are analyzing your cost benefit ratio you are trying to make a comparison between things in respect of which you have used different interest rates.

Mr. MACNABB: These studies have taken place over a period of 20 years and the interest rate was bound to change during that time.

Mr. KINDT: Yes.

The CHAIRMAN: Excuse me, Mr. Kindt. Mr. Davis was questioning the witness and I think we should allow him to continue until he has completed his questions. When he has done so I will be pleased to recognize you again.

Mr. KINDT: Mr. Chairman, I should like to finish this line of questioning.

The CHAIRMAN: Mr. Davis are you agreeable to Mr. Kindt completing his questions?

Mr. DAVIS: Yes.

Mr. KINDT: Mr. MacNabb, if you are going to have comparability in respect of your cost benefit ratio, as Dr. Davis has said, you must use the same interest rate, is that right?

Mr. MACNABB: That is right.

Mr. KINDT: You must use the same interest rate for discounting both benefits and costs?

Mr. MACNABB: Yes, and that is exactly what we have done at any point in time. Take for example the middle 1950's. The applicable interest rate was four per cent. We used four per cent in respect of all projects. As that interest rate has gone up we have increased the interest rate we have used.

Mr. KINDT: Yes.

Mr. MACNABB: We have changed our interest rate to keep in line with market conditions, or what we estimated to be the market conditions rather than use an unrealistic interest rate.

Mr. KINDT: And at the conclusion of your computation you are adding wheat and corn, comparing the two, not knowing what you have?

Mr. MACNABB: No. At the conclusion when we are evaluating a proposal we use an interest rate which we feel is applicable in Canada if we are building the project ourselves and comparing that to the interest rate in respect of United States utilities. If they have to raise the money they may have to pay four and one-half per cent. If we have to raise the money ourselves we may have to pay five per cent.

Mr. KINDT: I am now thinking of the benefit side of the situation, and perhaps we will have to look further into these figures to get to the bottom of the situation. It seems to me to be extremely important in arriving at a cost benefit ratio to keep these interest rates consistent. I imagine the minister had a cost benefit ratio in mind—and I am sure he must have—before he placed the stamp of approval on this project.

He must have known that this project, from Canada's point of view, was a ratio of cost to benefits. What I am trying to get at—and I think I have that right as a member of this committee—is to ask questions on cost so as to see if everything is comparable.

The CHAIRMAN: I have no objections to your asking questions on cost but please do not break up a line of questioning of another member. If you are near completion on this line of questioning I will let you finish it.

Mr. KINDT: I am asking something that is important while what you are checking me on is something that is not important. We are here to find things out.

The CHAIRMAN: I will allow you any length of time you need on this line of questions, as I would any other member. The only point I am making is that Mr. Davis did have recognition of the Chair on a certain line of questions.

Mr. KINDT: He and I have been asking questions together.

Mr. DAVIS: Perhaps I can finish my line of questioning. The interest rate is obviously very important. The lower the interest rate when we are discounting future benefits, the higher the present value.

Mr. MACNABB: That is right.

Mr. DAVIS: Therefore, if we use the United States rate of $4\frac{1}{2}$ per cent, what will be paid currently for the benefits is much greater than were we to use the current Canadian borrowing rate of $5\frac{1}{2}$ per cent.

Mr. MACNABB: It is approximately \$20 million greater than if we used the interest rate of 5 per cent.

Mr. DAVIS: The sales agreement envisaged the use of an interest rate available to a United States private entity of $4\frac{1}{2}$ per cent. Therefore, we are going to receive this year something like \$20 million more than had we done this financing in Canada.

Mr. MACNABB: That is correct.

The CHAIRMAN: Mr. Kindt, is there anything you would like to follow in this line?

Mr. KINDT: I do not wish to monopolize the time of the committee. I would like to see someone else ask questions on this all important subject of cost.

Mr. BREWIN: I wanted to ask Mr. MacNabb about table 8 on page 96 of the blue book. The same document appears to be tabled on page 138 of the green book. Is it the same thing?

Mr. MACNABB: Yes, it is.

Mr. BREWIN: I notice the flood control benefits and the capital costs are broken down by projects. Is it possible to do that in relation to power benefits, or is it done somewhere else?

Mr. MACNABB: We have done this to arrive at a benefit cost ratio for the various projects.

Mr. BREWIN: Where is that information?

Mr. MACNABB: It is in our calculations, and these are the calculations that result in benefit cost ratios which I indicated today.

Mr. BREWIN: Could you give us the information today on the power benefits allocated to each one of the three projects here, Duncan, Arrow and Mica?

Mr. MACNABB: I can give you an indication. If you turn over one page in the presentation paper, you will find it on page 99, table 9. Take a look at the middle column—"agreed entitlement of energy". The figure of 113 applies to the contribution of Duncan alone because in that year, 1968-69, only the Duncan project will be in operation. The next year the Arrow project comes in, so the Arrow project increases the benefits from 113 up to 572. That will give you an indication of the contribution of Arrow. You carry on then, with those two projects in operation, until the year 1973-74 when Mica comes into operation, Mica increases the benefit from 572 to 759. This will give you the relative amounts of increase for each project.

Mr. BREWIN: The decreasing benefits shown under that agreed entitlement are due to the fact that the total benefits start to decrease by reason of greater installations in the United States. Is that correct?

Mr. MACNABB: This is the primary reason. As their system grows, they begin to put in more thermal electric power. This has an effect of reducing their dependence on Canadian storage and therefore reducing the benefit to them of Canadian storage.

Mr. RYAN: Will they spill our water over their dams or will they use it?

Mr. MACNABB: The water will still go downhill and they will still use it but their need for controlled water will be considerably smaller.

Mr. BREWIN: Has any table been prepared using the material you have now given us in table 9 and applying it to table 8 to show the benefit cost ratio in regard to the individual projects as a whole?

Mr. MACNABB: Not in this book, but using these ratios that I have indicated in table 9. In other words, if Duncan contributes 113 megawatt years in energy and you compare that to 759 for the three projects together, you will then see it is contributing roughly 15 per cent of the total in the year 1973-74. The increase, when you add Arrow, is roughly 460, from 113 up to 572. If you compare the contribution of Arrow of 460 to the total of 759, you can say that Arrow lakes are contributing about 60 per cent of the total. In arriving at the benefit cost ratio over the sale period we have said that Arrow lake contributes about 60 per cent of the energy benefit, and we would work out a similar percentage for the capacity which appears in the far right hand column of that page.

Mr. BREWIN: Would it not be useful to have that so that we would see in tabular form the benefit cost ratio worked out in relation to each one of these projects?

Mr. MACNABB: We have them worked out on paper and if you like we can distribute it.

Mr. BREWIN: I would like that.

Mr. MACNABB: I am not sure we have those figures here today.

Mr. BREWIN: No, I do not mean today, I would like them for future analysis.

The CHAIRMAN: It is agreed that those figures will be published when available. Are there any other questions?

Mr. HERRIDGE: Mr. MacNabb, can you explain how it is that the United States authorities consider Libby as economic and worth while at a cost of \$350 million while our people do not consider the east Kootenay storages worth while at a cost of less than half that figure?

Mr. MACNABB: On the first question I am afraid you would have to ask the United States authorities why they feel it is economical. My understanding is that, on the basis of its treatment under the treaty, it does have a benefit cost ratio of at least one to one.

Mr. HERRIDGE: It pays its way.

Mr. MACNABB: Yes. If they wanted to build Libby at their expense, costing us only \$12 million for the land in Canada which it would flood, the comparison we would have to make would be whether we should spend over \$100 million on the projects in the east Kootenay valley in Canada which would control the Kootenay river in its flow downstream or else pay \$12 million for Libby which would give us approximately the same benefit in the Kootenay. The only difference was the power we could generate at site from these projects. This did not compare with the treatment we received under the treaty of the Libby project. We, of course, also compared it with the possibility of using the three structures on the east Kootenay to divert the water to the Columbia, but this again did not compare with the treatment we received under the treaty. We have received a better deal than we would have received if we had gone in to build the east Kootenay projects ourselves.

Mr. HERRIDGE: Some time ago you discussed the total cost of Arrow. You said there was \$50 million left for compensation or rehabilitation.

Mr. MACNABB: I think \$50 million was Dr. Davis's estimate. I said, I believe, that the total cost of the project was \$295 million and that over 40 per cent was for relocations, etcetera, involved in flooding. This involves relocation of roads and the buying of homes; and I am not quite sure whether it includes a lock; I would have to check that further. These are costs separate from the actual cost of the storage dam itself.

Mr. HERRIDGE: These are costs which are left for these other purposes?

Mr. MACNABB: That is correct.

Mr. HERRIDGE: Then my constituents must expect very generous treatment?

Mr. BREWIN: I would like to ask a question about table 8 on which there is one thing I do not understand—there are probably a great many things I do not understand but this particular matter is contained in table 8. Here you are making a comparison and getting at capital costs.

Mr. MACNABB: I have some very nice bright charts, and if I could use them to explain the two different types of treatment which we have used and which are explained on page 100 of the presentation paper, it might be helpful. Perhaps I should refer to these charts to clear up the situation.

The first chart explains the table which you are questioning; it is table 8 of the presentation paper. Rather than give it as a comparison in the year 1973, as does that table, this takes it year by year through the construction phase of the project.

In the year 1963-64 we have a deficit of approximately \$10 million. This is the money which is being spent by British Columbia Hydro on the project with no income coming in at this stage. But then in this year we receive a large payment for power from the United States, which gives us a very large surplus. Just following this down, it drops in the following year because we have construction expenditures and again in the next year, and so on. There is an increase in the year 1969-70; this is caused by the fairly substantial return of about \$52 million for the Arrow lakes flood control payment. Then it begins to drop again as construction expenditures continue. At the end you will see there is a deficit of about \$20 million.

However, we do not leave the large surplus just sitting around; we make use of it to earn interest. So if you assume that we could earn 5 per cent

interest on this money which is in the bank, the cross-hatched area represents the interest you would earn on the unused portions of these payments by the United States; and of course these amounts become larger because it is compounded annually.

At the end of the construction period you will see that we have a surplus of \$53 million in 1973, after paying all construction costs over that period.

In the next phase—and I believe this is what your question is concerned with—what about the operation and maintenance costs? You have to look at the whole 30-year period of sale as well as the period of construction. The first part of this next chart is a repetition of what you have just seen. The construction period is over here and the pink areas show the interest earned. We have this surplus of about \$53 million when we begin to operate these projects. The operation and maintenance costs are reflected by these drops year by year over the 30-year sale period.

The interest earned on the \$53 million surplus almost completely offsets the operating costs—but not quite, because you notice at the end of the sale period, rather than having a \$53 million surplus, we are down to a figure of about \$40 million. This is what we refer to on page 100 of the presentation in the fourth paragraph, where we say:

Under this approach we find that all construction costs are paid as they appear and all operating and maintenance costs of the storage are fully covered. In addition, a revenue surplus of \$40 million remains at the end of the period.

So interest plays a very big part in this. This is the value to us of getting the lump sum payment. Our benefits have been discounted at $4\frac{1}{2}$ per cent, but that money is worth at least 5 per cent to us, I would say; and this is the assumption we have made here. We have assumed that the surplus revenues can be re-invested in Canada at 5 per cent.

The CHAIRMAN: I wonder, gentlemen, if these charts should be incorporated in the minutes in the same fashion as the maps. If we do not take this course, the people who are studying with some care the Minutes of Proceedings and Evidence, which are receiving wide distribution now, will find them unintelligible. Would that be agreeable?

Agreed.

Mr. BREWIN: I know it is a bad thing to ask a question to which one is unlikely to understand the answer, but this is related to the same matter and I would like to put this question. I believe there are certain payments to be made to the United States in regard to annex A (7) to the treaty.

Mr. MACNABB: I think I understand your question, sir. I believe you are referring to the fact that the sales agreement has assumed operation for maximum downstream benefits, and if we deviate from maximum downstream benefits we therefore naturally have to reimburse the purchaser for any loss. They have paid us on the basis that they will get the maximum downstream benefits. If we operate in accordance with paragraph 7 for maximum system power, if there is any reduction in the downstream benefits then, of course, the purchaser must be reimbursed for the amount he has lost.

The Montreal Engineering Company has studied the flexibility of operation provided for Canada. They will be able to elaborate a great deal on this, but the answer is that we cannot foresee any payment being required.

Mr. HERRIDGE: I would like to ask two questions.

In view of the experience of British Columbia Hydro over a number of years—of course their projects would be much smaller than these—we know

that the average exceeded the estimated cost by 50 per cent. I have figures supplied by a friend in the British Columbia Hydro. In view of that, what do you think of the assurance that these costs will not greatly increase over the next ten years?

Mr. MACNABB: These costs are estimated by very well known engineering firms and I have a great deal of faith in their ability to estimate accurately.

As you have noted, the costs estimates for the British Columbia projects that you refer to were for very small projects. I have a list or summary of bids and estimates on recent major hydroelectric structures in the United States, in the Columbia basin, and I feel that our engineers are just as capable of estimating costs as are United States engineers. This comparison comprises 17 projects or units, and I think in only two projects did the actual bids exceed the engineers' estimates. They were very substantial projects such as the Wanapum dam, for which the bid price was \$88 million odd and the engineers' estimate was \$137 million odd.

Another example, a fairly recent one, was the Ice Harbor project on the Snake river a tributary of the Columbia in the United States. The bid price was \$29,500,000 while the engineers' estimate was \$31 million. That was very close.

The one that was above the project bid was a project built in 1951, the McNary. This was for a number of units, and the bid price was \$15,835,539 while the estimate was \$12,784,000. I may have misled you when I said that these were all on the Columbia. There are four which are outside the Columbia river basin. The Glen canyon project is on the Colorado river, and is a very large structure. There, the bid was \$107,955,522 while the estimate by the engineers was \$135,608,170, so I do not think you can say automatically that the costs always exceed the estimates.

Mr. HERRIDGE: Do you feel that the British Columbia Hydro have installed these projects well within the estimated figures?

Mr. MACNABB: As certainly as anybody can. Of course, I cannot guarantee anything. It would seem to indicate that the larger the project the less the possibility of any estimate on one item being such that it would make very much difference on the over-all cost of the project.

Mr. LEBOE: Would you not think that the type of structure would have a great deal to do with how close they can estimate these items? That is one of the reasons why the Peace river dam is coming down by about 75 per cent of the estimated cost, and it is a fact that it is an earth filled dam, and there are new methods being brought in to handle this material so rapidly that the contractors who bid on it were able to come down in their price; whereas if it had been a concrete dam, where experience has been for many years with a lot of dams of concrete, would you say that this possibly has a leading effect, because most of these are now earth and rock filled dams?

Mr. MACNABB: Yes, I would think the possibility of running into trouble is more pronounced with a concrete dam where you have more specialized work and problems. But you spoke of British Columbia projects, I cannot tell you whether that is true or false. Perhaps Mr. Keenleyside could tell us.

Mr. HERRIDGE: I have had the figures given to me and I think they are accurate. I can find out. Now on page 63 of the blue book we find:

...the United States could not be expected to have to rely solely on downstream benefits resulting incidentally from Canadian storage operation for Canadian needs.

And then on page 78 of the same book I find:

- (v) The United States is to operate Libby for the advantage of the downstream plants in Canada if such operation does not detract from their own benefits.

My question is this: why does not this latter principle apply to Canadian storage, that is, why does not Canada get an assured plan?

Mr. MACNABB: The big difference is the one I pointed out this morning, that we receive from the United States a half share of the downstream benefits produced by our projects. Therefore it is understandable that they would expect to have some guarantee of benefit out of it also; they would want to have an assured plan. This is quite consistent with the International Joint Commission principle which says that downstream power benefits in one country should be determined on the basis of an assured plan by way of storage in the upstream country. And if you go into a discussion of that principle it says this principle is basic to the determination of the dependable capacity and usable energy that can properly be credited to operation of upstream storage for the benefit of hydroelectric power generation downstream. Emphasis is placed particularly on the concept of an assured plan of operation of the storage with the expectation that the downstream system will be developed and operated so as to make optimum use of the streamflow regulation provided. We have followed this International Joint Commission principle very closely in the treaty.

But the Libby situation is entirely different, because there Canada does not share the downstream benefit with the United States; there is a very substantial low cost downstream benefit we get in Canada. Therefore the United States is under no responsibility to operate under an assured plan. But in this particular case they have stated that they would guarantee the operation of that project, in coordination with our projects downstream unless they lost power in doing so.

Mr. BYRNE: I would like to ask Mr. MacNabb if he feels that at Libby it has been determined that a greater power production would be needed? Would it not be possible to re-regulate that water from Libby in the Kootenay lake storage, or would that be the purpose? Would the purpose there be to dam the water at Libby for use in the lower Columbia? And if so, it could not be regulated; if it is simply for power production at Libby; is there not a possibility of re-regulating at Kootenay later?

Mr. MACNABB: No. They will not spend over \$300 million just to build a project with which to dump water. One of the principal uses for the project is to produce power. I am sure the operation will be a reasonable one. But in assessing the problem, in trying to produce downstream benefits from Libby, we have taken what I feel is a very unreasonable operation of Libby, trying to see what effect it would have on our downstream generators. And after we have looked at the operation as a purely daily peaking project, with respect to the release of water, we find there would be a fluctuation of one tenth of a foot on Kootenay lake, and this would even out the flow for the Canadian plants on the Kootenay river downstream.

Mr. HERRIDGE: You mention the fact that United States people will be using thermo plants more and more as the years go by and using our water for peaking purposes.

Mr. MACNABB: No, I did not say they would be using our water for peaking purposes, but rather that as they built thermo plants, they would be using those thermo plants for peaking purposes, and this is when our capacity

benefits begin to reduce fairly quickly because they are not dependent on Canadian storage any more for peaking purposes, because they have installed their own thermo plants.

Mr. HERRIDGE: Have you any idea when that diminution would commence, and at what rate throughout the years?

Mr. MACNABB: We have guaranteed returns under the sales agreement, and our table of benefit reduction is shown on page 99 of the presentation paper. If they fall below this, we can still get payments. There is no retroactive clause in it.

Mr. HERRIDGE: What about the date of it?

Mr. MACNABB: The date—if you look at table 9, you will see that by the year 2003 they will have reduced it to about 200 megawatts a year of energy. The United States hydroelectric system would be fully installed at that time and our energy benefit should remain fairly constant thereafter, because it is determined by the amount of hydroelectric installation in the United States.

In other words, how much energy they can get out of the unregulated flows as compared to how much they can get out of the regulated flows. As they add more and more hydroelectric units, of course, they could generate energy from higher and higher streamflows; but they reach a point where economically they cannot install any more generators. From that point on there should only be a very slight reduction in the energy. The capacity is a different story. This is governed by installation of thermal electric units in the system. You will notice under the high load growth condition column that it would disappear entirely by 1996. This high load growth was based upon the most recent load forecast in the United States. We did not accept that for the payment to Canada. We took an average between the high and the low that you see there and worked out an average capacity entitlement. Under the low load growth that capacity entitlement would not disappear until the year 2010. So, we took an average load growth and added the extra capacity benefits we get from the treatment of the Grand Coulee pumps and came out with the agreed entitlement shown in the last column. This is guaranteed. Our payment is based upon that for the whole 30 years. After that, what we get in capacity, I could not tell you. If the high load growth comes about, there will not be any capacity outstanding. If the low load comes about there will be a capacity of about 600 megawatt years. In time that will diminish and disappear. This is one of the great advantages of having the power sale made on a guaranteed basis. We are not dependent upon what happens in the future in the United States' system.

On page 101 there is a subheading (b), Power Benefits in Addition to those of the Sales Agreement. There we have tried to estimate what the value of the power benefits would be after the sale period. At the bottom of that paragraph, we say:

The annual value of the power benefits not covered by the sales agreement is approximately \$5 million at today's value, and between \$5 to \$10 million if allowance is made for the inflation of those values.

This is based primarily on the continuing energy. We have not put much credence on the fact that we would have capacity at that time.

The CHAIRMAN: Is that in perpetuity?

Mr. MACNABB: That would continue until the treaty is terminated.

Mr. HERRIDGE: Until the treaty is terminated?

Mr. MACNABB: Well, the treaty has a minimum life of 60 years. It can go on longer than that.

Mr. HERRIDGE: I have another interesting question; at least I think so. I am a member of the Agricultural Institute of Canada. Mr. Kelly, who is one of Mr. Bennett's land use advisers made an address before the Kootenay-Okanagan annual meeting in which he dealt with the Columbia agricultural possibilities. I have the text of his address. In the address he recognizes the good value of the land and suggests the best way to preserve it is to have the people use the mountainsides in the meantime, and then in 100 years take down the High Arrow dam and allow the people to settle on the good alluvial soils of the lower levels. Can this dam be taken down at the end?

Mr. MACNABB: We would not have to take it down. We just would have to lower the water level.

Mr. HERRIDGE: It is his suggestion that the dam be taken down, not mine.

Mr. MACNABB: I am afraid I cannot agree with him.

Mr. GROOS: We might lower it down just to take a look.

Mr. BYRNE: All the west Kootenay people will be hillbillies.

Mr. KINDT: When shall we move on to the question of flooding? We have spent our entire time on hydroelectric energy.

The CHAIRMAN: Go ahead.

Mr. KINDT: This is a multipurpose project; there is flood control, irrigation, and other things. When shall we get on to those other things?

The CHAIRMAN: Right now. We were hoping perhaps we could bring this to a conclusion this evening, without sitting tonight. Then, of course, we will have to be interrupted for Monday, Tuesday and Wednesday when the British Columbia representatives are here. However, would you proceed with your line of questioning now?

Mr. KINDT: On the subject of flood control, I notice on page 96 of the blue book that \$56.3 million is the sum to be paid by the United States for High Arrow. In other words, there must have been something back of that in your computation of the figures in respect of how you arrived at that \$56.3 million of benefit to the United States for flood control. Could you give us a brief rundown of how that was arrived at?

Mr. MACNABB: That is given in considerable detail on page 143 of the white paper, the green covered book.

Mr. KINDT: There is more there than I can digest in the time of the committee. I would prefer to bring this subject up at a later date.

The CHAIRMAN: Thank you, Mr. Kindt.

I think Mr. Brewin has a question to ask now of the minister.

Mr. BREWIN: There is no particular need to ask it now, but it is a good time. You may remember, Mr. Chairman, I was asking the minister about some matters raised in the correspondence between General McNaughton and himself. I was calling attention to his letter of August 6, 1963, to General McNaughton. On the first page of that letter there is a fairly long paragraph there.

Mr. MARTIN (*Essex East*): The fourth paragraph.

Mr. BREWIN: I was calling attention of the minister to his statement:

—in the absence of any indication from the province that they are prepared to reconsider their decision, I can see no practical alternative but to accept it.

I take it from what the minister said the other day there was no formal inquiry from the province in respect of whether the changed conditions in any way changed their view on the matter.

Mr. MARTIN (*Essex East*): It arose out of continued discussion with the province.

Mr. BREWIN: The point I have in mind—and perhaps this was not in your mind, or is not relevant—is that I understand one of the reasons why the province objected to—what I might call the McNaughton project—was that that made power available which perhaps would be in competition with a surplus of power if it could not be exported, and at that time it was the federal government's policy not to export power. Having in mind that the Peace river project also is in contemplation, that situation, I take it, changed by 1963 because at that time it was contemplated the downstream benefits would not be delivered to Canada but would be sold by the United States. Was that changed condition ever discussed with British Columbia?

Mr. MARTIN (*Essex East*): Mr. Brewin, I do not see how that would alter the situation.

I would ask you to look at what I said in the fifth sentence of that paragraph in my letter, which reads as follows:

The problem associated with such a suggested change of projects, aside all together from the conclusions of engineering firms which support the High Arrow development, is the problem of jurisdiction.

You cannot get away from that.

From the records which are available, it would appear that the province of British Columbia, which under the British North America Act has jurisdiction over the water resources of that province, considered the alternatives and then selected the present treaty projects . . .

Presumably, for the reasons that Mr. MacNabb has given the last two days.

. . . for inclusion in a cooperative plan of development. You yourself have testified that once the responsible government has reached a decision that a certain project cannot be built, it is idle exercise to go on considering it. This would now appear to be the case with the Dorr, Bull river-Luxor reservoirs and, in the absence of any indication from the province that they are prepared to re-consider their decision, I can see no practical alternative but to consider it.

You will recall what Mr. Harkness had to say in this context in the house.

We can of course prevent objectionable developments of the Columbia river through our powers under the International River Improvements Act. However, on the basis of engineering evidence . . .

and, I think this has been cleared up by what Mr. MacNabb said.

. . . we would have no reasonable basis for doing this in the case of High Arrow. Moreover, while we can prevent certain developments we cannot insist that others should take place.

That is the situation. It would be quite different if Canada was not only the instrument for the negotiation and the signature of a treaty, or an exchange of notes, but if it was also the owner of a resource, which is not the case.

Mr. BREWIN: I am having difficulty with this form of expression, that "in the absence of any indication from the province they are prepared to re-consider their decision." This is a negative way of putting it and I am wondering if they did positively indicate they would not re-consider their decision.

Mr. MARTIN (*Essex East*): No doubt about that. But, you asked me whether there was a formal arrangement. Naturally the province of British Columbia and Canada, in a matter so vital to British Columbia, were working together because basically they have the same interest, and there was a continuous contact between the parties. But, I know of no correspondence in the matter, not that that would change things one way or the other.

Mr. LEOBE: Mr. Chairman, it would be helpful if we reminded ourselves that the representatives from British Columbia will be here next week and they will be in a position to answer these questions much better than anyone else.

The CHAIRMAN: I do not want to cut Mr. Brewin short if his question is directed to the subject.

Mr. MARTIN (*Essex East*): What was Mr. Leboe's remark?

The CHAIRMAN: He indicated that representatives from British Columbia would be here next week.

Mr. BREWIN: But, I want Mr. Martin's point of view. As I understand it, what the minister is saying is that although there was no formal—

Mr. MARTIN (*Essex East*): No, no. I said I know of no formal communication. But, what I was emphasizing to you was the nature of the working together of the provincial and federal teams. Naturally there was the fullest discussion and these matters were continuously gone over. However, on the basis of engineering evidence we would have no reasonable basis for doing this in the case of High Arrow; but, in addition to that, if you look at the advantage of Libby, it was much better.

Mr. BREWIN: Surely, that was not the view, for example, of Mr. Harkness, who was on the committee and said we had accepted the second best by reason of the intervention of British Columbia, and Mr. Davis expressed similar views, that we were not getting the best project.

Mr. MARTIN: I would ask you to look at page 68 of the presentation paper, where this is fully discussed. I am reading from the top of the page:

The logic of the Canadian situation indicated that its negotiating position would be strongest if based on the storages that showed the highest benefit-cost ratios: High Arrow, Duncan, Mica and the Canadian East Kootenay storages at Dorr and Bull River-Luxor. This was the position adopted, despite the knowledge that, *taken by themselves*, it was doubtful the East Kootenay storages would be the best bargain for Canada. It was recognized by the Canadian engineers on the Technical Liaison Committee from the outset that they would *not* be the best bargain if (1) a first-added position could be secured for the other Canadian storages, placing *all* of them ahead of Libby, regardless of the fact that Libby could be built ahead of Mica, and (2) Canada had almost no cost to pay on Libby and got substantial benefits from it.

Canada accordingly argued for its storages and rested its case squarely on General Principle No. 1. British Columbia had accepted the position with some reluctance because of the flooding involved in the East Kootenays. The United States made it clear that "factors not reflected" in the benefit-cost ratio were of great importance to it and that, if Canada would not agree to the Libby storage, it would not agree to first-added position for the Canadian storages unless it got the kind of advantages it knew it could get from Libby. This would have involved a sale of power by Canada to the United States to the extent of 275,000 kilowatts at about 2.5 mills per kilowatt hour. Any such conditions would rob the Canadian East Kootenay storages of the marginal advan-

tages they had. In that situation the province of British Columbia decided it could not agree to the extensive flooding in Canada that our storages would require.

A further consideration altered the position somewhat. At the outset it was important for Canada to be able to offer as much storage as possible, since it was not entirely clear precisely how much would be of value for power and flood control in the United States; or precisely how the value to Canada for that service would balance against the value of keeping larger parts of our storages uncommitted and entirely available for our own uses. The full array of the Canadian storages put forward at the outset would have provided about 25 million acre-feet of storage. It became clear that the greatest balance of advantage to Canada could be secured by committing less. (The Treaty provides for 15.5 million acre-feet for power, of which 8,450,000 acre-feet are committed also for flood control operating plans.) In this situation, the Canadian East Kootenay storages were of small value for downstream benefits. Their value for power in Canada was known to be remote in point of time and marginal as to cost.

The Canadian objective thus shifted to retaining the first-added position that had been secured for our other storages by our insistence on these cost-benefit ratios and, with it, getting the best possible arrangement in relation to Libby. This objective was secured. Libby comes after the Canadian storages in credit position; Canada pays no costs except the relatively minor ones for the reservoir in Canada; and Canada retains whatever benefits in power and flood control are produced in Canada. Having achieved these objectives, the net result for Canada is better than it would have been with the dam at Dorr, Bull river and Luxor.

There was no reason to reconsider because the Libby development under arrangements made in the treaty is better, quite obviously, than the east Kootenay structures.

Mr. BREWIN: At any rate, Mr. Martin, if this was your view at this stage obviously there would not have been any point in trying to persuade the British Columbia government to change its mind?

Mr. MARTIN (*Essex East*): I think that is right.

Mr. BREWIN: I do want to ask you several questions in respect of another matter relating to this discussion, and I refer to general McNaughton's correspondence again, particularly his letter to you dated September 23, 1963. There appear three paragraphs on the second page of that letter which deal with the subject I should like to have you clarify if you will. General McNaughton states in this letter:

Re your Para figure 3. I do not agree that the government of B.C. is the government responsible for final selection, by which I understand you mean the ultimate decision. The Columbia and the Kootenay are rivers which flow out of Canada, and, under the BNA, Act, Canada, by the International River Improvement Act, has asserted jurisdiction.

The government of Canada is therefore the final authority and is responsible, at the least, that harm is not done to Canada. These are the words I have heard used by competent legal authority and with which I find myself in complete agreement.

In this connection, you may wish to have looked up for you the statement made by the Hon. Jean Lesage in July, 1955, when he held the office of Minister of Northern Affairs and National Resources in the

St. Laurent administration (see *Electrical Digest*, July, 1955) and was responsible for the presentation of the International Rivers Bill to parliament.

My question arising out of that portion of the letter, Mr. Martin, is, do you agree with that statement of the constitutional position?

Mr. MARTIN (*Essex East*): No. I had already dealt with this matter first of all in my letter of August 6, 1963 in which I have stated:

We can of course prevent objectional developments of the Columbia river through our powers under the International River Improvements Act.

There is no doubt that under that act objectional developments provide a base for federal intervention in respect of the use by the owners of the resources in a particular plan. That condition was not present in these instances. I submit to you, and I am going to refer to further correspondence in this connection, that the position taken by the province of British Columbia in relation to the inapplicable powers of the federal government under that act more than justified the position that the former government took and that this government took. But, apart altogether from that, if you do not agree with this interpretation of the law, is the question of merit itself, with which we have dealt.

I refer you to my letter of October 8, 1963 to General McNaughton and particularly the third paragraph where I state:

As to approval of the Treaty projects, it is true that this government has the final say, in a negative sense, through application of the International River Improvements Act. However, the action of refusing to approve a development proposed by a province in relation to resources of which it is the constitutional owner is one that cannot be taken without good and adequate cause.

There certainly was not in my judgment, and I think this is clear from what Mr. MacNabb has said today, any good or adequate cause to take any other course.

General McNaughton has his view in respect of the desirability of sequence IXA. Incidentally I am not too clear what sequence IXA really is because there have been several positions taken by that distinguished critic that lend themselves to the interpretation of sequence IXA as meaning different things.

Mr. HERRIDGE: Is it not correct to say that the Prime Minister of Canada and some of your prominent members did not take that point of view during the election but changed following the election?

Mr. MARTIN (*Essex East*): Mr. Herridge, I do not propose during these studies which we are all making here, I think objectively, to engage in any political controversy.

Mr. HERRIDGE: I was just asking a question.

The CHAIRMAN: I do not wish to cut Mr. Brewin short but I must remind members that we are all anxious to adjourn.

Mr. BREWIN: I do not want to impose on your kindness, Mr. Chairman, nor the kindness of the committee, but I wonder in connection with what I have asked whether Mr. Martin did check, as General McNaughton suggested, a statement made by Mr. Lesage and whether it is available. I would be quite interested in knowing the view taken by Mr. Lesage.

Mr. MARTIN (*Essex East*): I cannot recall whether I did nor not. I think I must have done so at the time. I have looked at a lot of Mr. Lesage's statements recently.

Mr. BREWIN: It is just this one statement that I am concerned with now.

Mr. MARTIN (*Essex East*): I do not know that that would change my position one way or another.

Mr. BREWIN: Your view apparently is that the Dominion of Canada has only a negative position to veto developments?

Mr. MARTIN (*Essex East*): I would put it much stronger than that. I think that at that time I was perhaps of a very optimistic frame of mind. I would have been stronger in my language. Under the International Rivers Improvements Act only in the event the province was pursuing an objectional development would it be desirable or justifiable to intervene. Apart altogether from the legalistic ground that you are taking now, and on which I am prepared to argue and have argued, I do not think your interpretation has any real merit.

Mr. BREWIN: I do not think you have heard my interpretation as yet.

Mr. MARTIN (*Essex East*): I am stating my opinion firmly and forcibly. In addition to that the overwhelming fact is one of merit of the respective proposals.

Mr. BREWIN: In respect of the constitutional issue then you recognize I think what Mr. Harkness describes as the right of veto of the provinces right of selection?

Mr. MARTIN (*Essex East*): I did not use the word "veto". The provinces have their rights under the British North America Act and the federal government has its rights. There is a question in each case of interpreting whether the exercise of that constitutional right in relation to any federal statute which permits interventions in certain cases should have had an over-riding effect. I do not believe in this case it should have had such an over-riding effect.

Mr. LEBOE: I should just like to remind you Mr. Chairman, that Mr. Martin suggested yesterday that irrespective of anything the government may do in a preventative way there is no way in which the government here can force any plan on the province of British Columbia, forcing them to do certain things.

Mr. MARTIN (*Essex East*): I think that is right. If there had been a violation of a statute, Mr. Leboe, the federal government might have stated its unwillingness to sign a treaty with the United States. That is not the situation here.

Mr. LEBOE: I was trying to make the point that the federal government cannot dictate to the province of British Columbia, forcing them to build dams in the province at specific locations because it does not have the authority.

Mr. BREWIN: Yes, of course it does have that authority.

Mr. Chairman, I should like to make one further point in this regard. Do you or as far as you know the government consider that if, and I know you will say that is not the situation, the position of British Columbia was unreasonable in respect of this situation you could proceed to declare the whole project not to be of benefit to Canada?

Mr. MARTIN (*Essex East*): There is no doubt about that.

Mr. BREWIN: That is precisely my understanding.

Mr. MARTIN (*Essex East*): That is covered under section 92(10)(c) of the British North America Act.

Mr. BREWIN: The government would have that right?

Mr. MARTIN (*Essex East*): Certainly.

Mr. BREWIN: That section to which you have referred gives the government that positive right?

Mr. MARTIN (*Essex East*): There is no doubt about that, but that was not the situation as the former government saw it, as their advisers saw it and as I see it now.

Mr. PATTERSON: To exercise that right would involve a dangerous procedure.

Mr. BREWIN: I have another question which I should like to ask the minister. I may have misunderstood something you said earlier, Mr. Martin, but I rather gathered you are taking the view that no matter what is suggested to us by witnesses or what we might think, this committee is only in the position to say yes or no, that is that there are no further concessions, qualifications, provisions or protocols possible, and that we should only recommend either for or against the treaty. Do you, on the other hand, conceive that if we saw certain things that we felt were obscure, or we saw benefits that might still be obtained, we could proceed to recommend that they be sought?

Mr. MARTIN (*Essex East*): I am glad you asked this; this was asked the other day and I stated what I believe, under our parliamentary system, is the case. The signing of a treaty with a foreign power, or with another country, is an executive act. However, I do not want you to conclude from that that the committee is not free to do what it wishes within the reference given to it by parliament. This is clear. What I have said, however, is this: That the government cannot accept any change in the treaty or the protocol as signed by the government of Canada and the United States. There was no obligation on the part of the government of this country to go to parliament at all in this matter. However, our tradition and our own commitment suggested that after there had been a conclusion reached between the government of Canada and the government of the United States, the matter would be referred to parliament for approval or rejection.

Let me explain why this must be our position, and I think you will agree that it is the only position that a government could take, and that it is in accordance with precedents, as I am going to show. First of all, these instruments, the treaty, signed in January 1961 by the former prime minister and, the protocol that was exchanged between Mr. Rusk and myself, were the result of a protracted period of negotiation in which obviously neither party is in the position to say that they got everything they wanted. This is a treaty, an accommodation between two countries in the common interest. However, these instruments have been worked over laboriously over a long period of time. They have been reviewed carefully and they have been considered by the governments to be in the Canadian interest. They represent the best arrangement on which agreement could be reached among the three governments concerned: The government of British Columbia, the government of Canada and the government of the United States.

There is no reason to think that a better deal could be negotiated now. In fact, it is increasingly evident in my judgment that in many respects the negotiating position would be less favourable to Canada, that it would be more difficult, for instance, for us to retain the first added position for all of our storage in relation to Libby and to other United States storages on which construction has started or has been authorized, such as Bruces Eddy, High Mountain Sheep, and so on. Also, there would be a less favourable discount rate for calculating flood control payments—that would be my judgment. Any attempt to make any improvement or modification—I would sooner call it a modification—would mean reopening the whole treaty and protocol with the risk, indeed I would say the actual certainty, that we would lose many of the real advantages for Canada under its present management.

What would it mean? It would mean we would have to go back to the United States. If it involved a matter that was of great substance, it would mean going back to the Senate of the United States, and from what I know as a result of my experience in these negotiations, this would be, from Canada's point of view, a most regrettable decision.

However, even if further negotiations were considered practical among the governments, these would inevitably be lengthy, there would be delays and substantial losses resulting from such delays.

I do not wish to make this statement too strongly but I make it with some reason for making it. We got this agreement not too early—and I will say no more than that.

Now, let us come back to the question of precedent. The question of signing a treaty is an executive act under our system, just as it is in Great Britain and other countries with a similar system. The power to negotiate and conclude treaties and to do other acts of an international character is part of the royal prerogative which in practice is exercised on the advice of the Secretary of State for External Affairs who, under the Department of External Affairs Act which he administers, is responsible for the conduct of official communications and negotiations with foreign states and international organizations. The conclusion of a treaty is therefore in law an act, as I said, of the executive power which possesses the authority—the only authority—to enter into legally binding agreements with foreign states and international organizations.

Now, in spite of this, it has been the practice in Canada for a number of years to ensure that all treaties are brought to parliament's attention in one way or another. By way of a parenthesis I should like to point out that when the former government signed the treaty with the United States, it took its position in compliance with its executive responsibility. It would then have been prepared, I am sure, to see that before ratification took place parliament was given the opportunity of examining whether or not the exercise of the executive power was desirable in the circumstances. Now I find, since we talked about this the other day, that in the case of matters of this sort I know of no case but one where the matter was proceeded with differently than in this case. In every case that had been considered, in the nine treaties that were referred to this standing external affairs committee, the standing committee was asked to recommend that the treaty be approved. In the one case, the amendments to the treaty of extradition with the United States of 1942, when during the deliberations there was a proposal made in the way of an amendment, the government, for some good reason which had nothing to do with the committee's deliberations, never proceeded with the treaty. In every instance where the government has signed a treaty this procedure has been followed, and I certainly would not, nor would the government, be prepared in any way to alter the course that we have followed.

A treaty, in its very nature, represents an agreement between two parties. The negotiation in this case was protracted and difficult. It was close to the point of no agreement. We would not risk what we believe is the great advantage that Canada derives from this project. That is the situation, clear and simple.

What you have the right to do is to make any kind of recommendation, but I have stated to you what inevitably must be the position.

Mr. BREWIN: This seems to me to be a matter of constitutional importance. Is the minister saying we are in a different position from the United States Senate when it ratifies treaties?

Mr. MARTIN (*Essex East*): We certainly are in a different position. The Senate of the United States has power that we do not have. The situation is not at all comparable.

Our situation is comparable precisely to that of the United Kingdom, where treaties are never submitted.

Mr. BREWIN: I have just one other question in connection with this matter. I am citing this gentleman not for political reasons but because he happens to state a contrary view to the view held by the minister, and he states it, I think, with great clarity and effect. I would like to ask the minister to comment on this statement which Mr. Davis apparently made in late 1962 when, it is true, he was a member of the opposition.

Mr. MARTIN (*Essex East*): Excuse me, Mr. Brewin, let me get this statement. I have anticipated this and I have a very good reply!

Mr. BREWIN: I am not sure whether what I have is the same. Mine comes from an attribution to Mr. Davis from the *Globe and Mail* recently, but a statement said to have been made in late 1962.

Mr. MARTIN (*Essex East*): It was made on December 12.

Mr. BREWIN: Suppose I read what I have and let us see if it is the same.

The Columbia river treaty, the government tells us, is to be brought before the House of Commons and there it will be promptly referred to the house committee on external affairs. Various experts and a number of publicly minded citizens will be asked to testify before that committee. They must be heard and their suggestions will be treated seriously—so seriously, in fact, that the treaty may have to be changed in certain important respects. To ignore these witnesses and to brush aside their recommendations would be folly; not only that, but it would make a mockery of parliament. Why bring the Columbia treaty before your elected representatives if it cannot be changed in any way? And why shy away from making changes which are in our national interest? After all, we have to live with certain aspects of this treaty for a long long time.

That is the quotation from Mr. Davis's speech. It seems to me that it raises rather an important issue. At that time Mr. Davis was in opposition. I think perhaps he was speaking for his party at that time and saying, "When we get in, we want to look at this thing and we will refer it to the committee on external affairs, and we will expect that committee to hear evidence and, on the basis of that evidence, if it sees fit, to recommend changes, otherwise it would be a mockery of parliament to bring it before the committee".

Mr. MARTIN (*Essex East*): When you said you were going to quote from a distinguished gentleman—and I am fully in accord with you that Mr. Davis is distinguished—I thought you were going to quote from some great legal authority, which you usually do and are capable of doing. But you disappointed me in this instance; you have simply quoted from a very distinguished and very able member of parliament.

Mr. BREWIN: I adopt his words.

Mr. MARTIN (*Essex East*): If I were to use your method of argumentation I could have obtained from this speech better passages than the ones you have quoted——

Mr. BREWIN: You can answer the other passages.

Mr. MARTIN (*Essex East*): ——but since you have addressed yourself to the weaker portions of this able speech, I would like to point out a number of considerations that you have overlooked.

First of all, the speech was delivered on December 12, 1962. This was when there was an agreement with the United States but when it was not clear that modifications by way of protocol could be negotiated with the United States. It was not until May 8, I think, of 1963 that the head of the govern-

ment of Canada and the President of the United States met, and it was agreed that this treaty, which I believe to be a good treaty, could be improved upon by way of protocol.

As Mr. Davis mentioned yesterday several times, many of the items which he has referred to in this speech are embodied now in the protocol. I would like to pay tribute to Mr. Davis because he was a very valuable assistant in getting some of these further agreements with the United States. He was talking of a situation where there was an *a priori* discussion, where it was not clear what was going to happen, where there was no agreement. There was a treaty but no agreement with British Columbia. There had been no agreement on price, and of course there had not been the achievements of the protocol.

I think my final observation on that is that I would quote Mr. Davis's last sentence in which he said—and I suppose he said this with dramatic emphasis:

And I would argue that this treaty is not a matter of partisan advantage or approach but is something with which we should concern ourselves and try to expedite as quickly as possible.

Mr. BREWIN: I subscribe and I am sure we all do to the noble sentiments at the end, but I wonder if Mr. Martin would address himself to the question and forget Mr. Davis for the moment. Is it not a mockery of parliament to bring a treaty for ratification and to hear witnesses and then to say to parliament, "This is the end; take it or leave it."

Mr. MARTIN (*Essex East*): You are too good a lawyer to be allowed to make that statement and have it go over as your statement because you know perfectly well that is not the case.

In Britain treaties are signed, as in this instance, by the government of the day and parliament has no right to reject them—as we even provide in our parliament. We allow for the right to examine and pass upon the policy of the administration, and that is what you and what parliament will be able to do. I do not think I can state the situation any more clearly.

Instead of making a mockery of parliament what we are doing in this instance—as Canadian governments have done since 1926—is to take a position and then, because we have a respect for parliament, to give parliament an opportunity to accept or reject the decision taken by the government in the treaty.

So it is clear, Mr. Brewin, that the committee can recommend anything it likes; no one has suggested anything else. Parliament, too, can take the action it decides upon; it can recommend approval of the treaty or recommend changes; the government cannot limit parliament in its action. However, it is the responsibility of the government to decide its own policy, and to stand or fall upon the judgment of parliament.

The government of Canada thinks that this is a good treaty as modified by the protocol. We believe it is in the interests of British Columbia. We believe it is in the interests of Canada; we think it is going to usher in tremendous development in British Columbia. While there are some features that, if I were negotiating *de novo*, I would seek to get, I am sure from my limited experience in this matter that we have the best deal we could get and that it is a good deal.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I will be very brief. I am descending from these heights down to the sordid matter of filthy lucre. Can you inform us of the precise form in which the payments are to be made from the United States. Is the payment of the \$254 million to be in United States funds?

Mr. MARTIN (*Essex East*): Section A(3) of the attachment relating to the terms of sale states that the purchase price of the Canadian entitlement to downstream benefits will be \$254.4 million in United States funds as of October 1, 1964, subject to the 4½ per cent discount if it is paid earlier. This price has to be paid to Canada contemporaneously with the exchange of ratifications of the treaty and, to quote from the attachment, is to be

Applied towards the cost of constructing the treaty projects through a transfer of the purchase price by Canada to the government of British Columbia pursuant to arrangements deemed satisfactory to Canada.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am aware of that.

Mr. MARTIN (*Essex East*): I am going on further.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I do not know if you understood the point of my question.

Mr. MARTIN (*Essex East*): Was it not whether we are paid in United States funds? Is that what you were referring to, whether we would be paid in Canadian or in American funds?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): No. The reason I asked the question is that I have heard reports from the United States that there is concern on the part of the American authorities at this time in view of their exchange position, about the payment of \$254 million in United States funds, and that there might be an attempt to have the Canadian government accept in its place United States bonds.

Mr. MARTIN (*Essex East*): I understood your question, and you were kind enough to mention that you had that in mind.

Well, as part of the general co-operation between the two countries in balance of payment matters, certain steps will be taken to mitigate the adverse effect which payments of such a large sum would otherwise exercise on the United States balance of payments. The usual method of handling smaller amounts of United States funds which accrue to the government of Canada is to take them into Canada's reserve of foreign exchange. The exchange fund in turn normally invests such funds in United States treasury bills or other short term securities. So far as the United States is concerned, such investments made by the exchange fund are regarded as a short term liability to a foreign government and constitute a debit item in the United States balance of payments.

However, in view of the magnitude of the proposed United States payment, \$254.8 million, it is desirable to spread over a longer period the impact of the transfer, so far as the United States balance of international payment is concerned. It is, therefore, expected that the United States funds which Canada is to receive will be invested by Canada in United States treasury non-marketable bonds which have maturities spread over a period of a few years.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): How many years? Have you any idea?

Mr. MARTIN (*Essex East*): The actual arrangements have not yet been made with the United States, but it is expected that they might range over a period of two or three years or something of that nature, and conceivably they could be longer; but that will be dependent upon conditions which prevail at the time. In this way the United States funds paid to Canada would not be taken into Canada's official reserves in one single and immediate transaction but only as the securities in question matured over the period. Consequently, the effect on the United States balance of payments would also be spread over a period. Arrangements for the holding

of United States funds in the form of securities of this type have been made by other foreign governments with the United States authorities from time to time in recent years. Is that right, Mr. Parkinson?

Mr. PARKINSON (*Department of Finance*): That is right.

Mr. MARTIN (*Essex East*): In effect, therefore, the proposed arrangement to handle the lump-sum payment mainly differs from normal Canadian practice only as a result of the size of the transaction and only to the degree that the resultant foreign exchange resources of Canada are held in the form of United States securities carrying maturity dates longer than has been normal in the past.

Details concerning all the arrangements mentioned above will be finally settled closer to the October due date.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Suppose there has been no determination. What would your position be with respect to the interest rate on these bonds or securities?

Mr. MARTIN (*Essex East*): I would like to make a statement about that. In order to make payment of \$274 million in Canadian funds to British Columbia in October, the government of Canada may find it necessary, to the degree that its cash resources at the time are insufficient, to acquire additional cash by the sale of securities. Since interest rates tend to be somewhat higher in Canada than in the United States, the rate of interest to be paid for such borrowing will exceed the rate which Canada will earn on the corresponding assets held in the United States. This, of course, is not a situation peculiar to this particular transaction. On the contrary, a differential margin of this kind is an expense that the exchange fund, for example, usually incurs in holding part of its assets in the form of foreign investments. The manner in which the government proposed to use the funds it will receive from the United States does not therefore constitute a special arrangement made for the benefit of British Columbia.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I bring up another point. As you have said, undoubtedly there will be a discrepancy between the return on American bonds and the interest rate which the government of Canada will have to pay in order to make the lump-sum payments to British Columbia.

Mr. MARTIN (*Essex East*): Yes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This will be a liability of the government of Canada.

Mr. MARTIN (*Essex East*): I am not sure. I think this is a matter that has to do with the Bank of Canada.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I asked if the discrepancy which Mr. Martin referred to as being inevitable between the rate of interest which will accrue to the government of Canada from the American paper being held, and the interest rate we will have to pay on this money we will require to borrow in order to make payment to British Columbia—I asked if that would be a responsibility of the government of Canada or a liability of the government of British Columbia.

Mr. PARKINSON: That would be a liability of the government of Canada as in the case of any other transaction. If, for example, British Columbia instead of acquiring this lump-sum payment were to come and borrow \$100 million in the United States tomorrow, as Quebec did some time ago, and received this large sum of foreign exchange, since something so large cannot be disposed of in any other way it is sold to the exchange fund. In this instance the same thing would happen; the government of Canada's exchange fund would invest the money in U.S. securities. This normally done in transactions of this kind, so it is not peculiar to the Treaty projects.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This particular transaction takes place within the context of a certain situation; and if I recall it correctly, it was only yesterday that you told me quite emphatically that the government of Canada had no financial responsibility in regard to this.

Mr. MARTIN (*Essex East*): With regard to the cost of the projects.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): But this is a cost of the projects.

Mr. MARTIN (*Essex East*): No, it is something that would be done in any transaction of this kind involving the transfer of funds, as a matter dealt with in this way, and it happens continuously.

Mr. PARKINSON: That is right; normally the money that comes in from earnings abroad, money that comes from exports and so on, is used to pay for other things, such as for imports. But when you get a situation involving two or three hundred million dollars, it is more convenient to handle it in this way, to pay it in the exchange reserves for future use.

Mr. MARTIN (*Essex East*): May I point out section 12, subsection 3, of the Canada-British Columbia agreement which reads as follows:

British Columbia will finance the treaty projects by use of the funds derived from the sale of the downstream power benefits arising in the United States of America, from the flood control benefits and from other sources as required, so that Canada shall have no obligation for financing of these treaty projects.

It happens all the time in the case of transactions of this kind.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): But there are no other transactions of this kind in Canada.

Mr. MARTIN (*Essex East*): There are transfer payments.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): But in the particular transaction as set out by that treaty the government of Canada has been acting merely as a receiving agent for payments from the United States.

Mr. MARTIN (*Essex East*): Well, Mr. Cameron, all my statement had to do with the cost of the treaty projects, and the federal government is not paying one cent towards those; and the transaction is a normal one in circumstances of this kind.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am sorry I cannot accept that, because this is an integral part of the cost of financing this project, and it is going to be borne by the government of Canada. Had the United States not been in this exchange situation, and had they paid in United States funds, this situation would not have arisen. But because they are in that situation the government of Canada becomes liable for financial responsibility in connection with this project, and no arguing to the contrary about it will get away from it.

Mr. MARTIN (*Essex East*): I do not agree with your conclusions. I would not have any hesitation in saying that even if that were the case, it is an assumption of responsibility that is well worth while, because this is something of great benefit to British Columbia and Canada.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am not concerned with whether or not it is worth while. I just want to establish the fact it is so.

An hon. MEMBER: What is it likely to amount to?

Mr. PARKINSON: I do not think we can say. When the time comes for the government to borrow money, it will be borrowing for other purposes as well, and all such borrowings are mixed up together. It might be borrowing

some short term, some long term and some medium term. The important thing is that Canada will have over \$300 million of additional reserves with the floor control payments later and it is in Canada's interest to hold these reserves.

Mr. MARTIN (*Essex East*): This has a very great value on Canada's balance of payment position.

Mr. PARKINSON: Yes. The interest differential is one small price we pay for it.

Mr. KINDT: If we did not take measures of this kind we could not keep the dollar at 92½. In other words, if we went on the New York market and bought Canadian currency in the amount of \$300 million or more at October 1, the Canadian dollar would be buoyed up perhaps something beyond 100 cents on the dollar.

Mr. PARKINSON: Theoretically that is possible.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am not objecting to it being done. I just want to have clear what is being done.

Mr. MARTIN (*Essex East*): That is fair.

Mr. LEBOE: After all, British Columbia is entitled to the money. The arrangement between Canada and the United States is the Canadian responsibility on account of the exchange.

Mr. MARTIN (*Essex East*): Yes.

Mr. LEBOE: It is not an obligation of British Columbia; it is a Canadian obligation in connection with the exchange fund. It has nothing to do with British Columbia, and therefore cannot be attached to the cost.

Mr. PARKINSON: That is quite right. Anybody who sells wheat abroad and gets dollars for it is entitled to sell it to the exchange fund and get Canadian dollars for it.

Mr. MARTIN (*Essex East*): This is a cost of holding foreign exchange reserves.

Mr. KINDT: I do hope, Mr. Chairman, that this fund will be handled in such a way that the dollar will be maintained at 92½. We have been worried about this since the treaty has been announced. I am hoping that whatever policy is put into effect by the Bank of Canada in these international balance of payments, that the dollar will be maintained at 92½, and that it will be spread over a sufficient period of time so as to have no effect upon the dollar relationship.

Mr. PARKINSON: I think the answer simply is yes. The whole point of adding to reserves instead of trying to get somebody else to buy them is to stabilize the dollar.

Mr. KINDT: British Columbia does not come into that at all. It is a federal government affair.

Mr. PARKINSON: Yes.

Mr. BYRNE: When it becomes necessary to make up this difference, will a money bill be introduced in the house?

Mr. PARKINSON: No. I do not think any money bill will be needed for that purpose.

Mr. BYRNE: There would be no further action in respect of this treaty in so far as the introduction of a money bill in the house is concerned?

Mr. PARKINSON: No.

Mr. HERRIDGE: Relating to Mr. Martin's remarks in respect of the government's responsibility having signed the treaty, would he tell the committee why the Prime Minister of Canada promised the resources committee of the

Arrow lakes that no liberal government would come to any decision in respect of the Columbia river treaty until the people of the Arrow lakes had been consulted?

The CHAIRMAN: What is the reference, Mr. Herridge?

Mr. HERRIDGE: I have the letter.

Mr. MARTIN (*Essex East*): I would be very interested in seeing that letter. Perhaps you and I could have an exchange on this.

Mr. HERRIDGE: I would be very pleased to put it on the record.

Mr. BYRNE: Did Mr. Herridge have an opportunity to see the petitions? Sixty per cent of the voters signed the petition to go ahead immediately.

Mr. HERRIDGE: No.

Mr. MARTIN (*Essex East*): I would like to see that letter. I can tell you that the petition of over 4,000 names—

Mr. HERRIDGE: Out of 57,000 eligible.

Mr. MARTIN (*Essex East*): —is one of the largest I have seen which was paid for by themselves asking us to get going. I have had some very interesting correspondence, by the way, recently from Mr. Dean of Rossland, British Columbia, on that subject. I would like to show you this letter some time.

Mr. HERRIDGE: I have a copy.

Mr. MARTIN (*Essex East*): Yes; it is a very interesting letter.

Mr. FLEMING (*Okanagan-Revelstoke*): I would like to come back to the previous discussion in respect of financial arrangements for clarification of a point on which I asked a question of the Minister of Finance in the house. On the budget speech of the minister, I drew attention to the fact that he had allowed for \$220 million in Canadian dollars in the budget in order to meet the payment, and we are dealing with \$274 million Canadian, or \$254 million American. There is an apparent discrepancy of \$54 million. Could we get a more comprehensive explanation of this than the minister was able to give at the time in the house?

Mr. MARTIN (*Essex East*): Yes. I do not know whether or not it is better to ask the representatives from British Columbia about that. There is some question of an indebtedness by British Columbia in the United States of \$50 million. I would prefer they deal with this.

Mr. FLEMING (*Okanagan-Revelstoke*): I am prepared to hold it.

Mr. MARTIN (*Essex East*): I think that would be better.

Mr. PUGH: I am wondering why it is better to hold it for British Columbia to answer.

Mr. MARTIN (*Essex East*): Because it is a matter involving their indebtedness and I think it would be better. After they have spoken, I will be very glad to deal with it.

Mr. PUGH: Are we not responsible for the whole of the amount turned over to Canada?

Mr. MARTIN (*Essex East*): If British Columbia asks that the money be held in the United States to meet an obligation of British Columbia, that is their business. This is a matter for British Columbia; this is British Columbia's money. British Columbia is a sovereign power within the meaning of section 92 of the British North America Act.

Mr. PUGH: The government of Canada which is to get the whole of this sum agreed that this short fall is O.K.

Mr. MARTIN (*Essex East*): It is not a short fall. But if British Columbia wants the money used in a particular way, that is up to British Columbia.

Mr. BYRNE: Why is it held by the federal government?

Mr. MARTIN (*Essex East*): No money is held by the federal government, The Canada-British Columbia agreement in clause 1 states:

Canada shall as soon as it receives the purchase price referred to in the terms of sale or other moneys under the treaty pay the full equivalent thereof, in Canadian dollars, to British Columbia and British Columbia shall assume the remaining obligation of Canada under Section A.3 of the terms of sale.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): At some stage would it be possible for us to have a report on what was the cost of this particular part of the financing?

Mr. MARTIN (*Essex East*): Sure. The estimated cost.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would that be possible?

Mr. MARTIN (*Essex East*): Yes.

Appendix D

A Preliminary Report On The Agricultural Potential of the Area Affected by the

Proposed High Arrow Lake Dams Project

Prepared by the Economics Division, Department of Agriculture,
February, 1962

Introduction

The construction of a dam across the Columbia river at a point some five miles west of the town of Castlegar in British Columbia has been proposed. This proposal is one of the alternative schemes which is being considered by the British Columbia Power Commission as a means of harnessing the hydro power of the Columbia river system. The construction of the High Arrow Lakes dam would create a reservoir extending from the damsite upstream to the townsite of Revelstoke. The Arrow Lakes as well as sections of the Columbia river would be affected by an increased depth of water. The maximum height of the water in the proposed reservoir would be 1,446 feet above sea level. In the consideration of this project the British Columbia Power Commission contemplates the acquisition of land up to the 1,460 foot level. This decision (at the time of writing this report) has not been made.

Purpose

The construction of the reservoir would result in land being flooded and removed, as a consequence, from agricultural use or from potential agricultural use. A consideration of the extent and the agricultural value of the lands that may be flooded is the purpose of this report.

Settlement and Land Use

During the early years of this century settlement occurred in the valley of the Arrow Lakes. Unfortunately, many of the original settlers purchased land from speculators who had held out promise of a great fruit growing industry for the area. The original settlers purchased small lots of from 10 to 20 acres which presented a challenge in the form of a formidable clearing and breaking problem. However, the lots proved to be too small in extent and of limited inherent physical productivity. Many of the original settlers did plant fruit trees on their small clearings with varying success. The valley does have a history of disease for orchards and this coupled with other problems which will be discussed later did not bode well for the settlers.

Abandonment of holdings have been common since settlement, with many of the remaining farms being operated only on a casual basis. Prospecting and mining in the early years presented a local market for some produce. However, this activity declined and so has this market. The main source of income for the settlers and subsequent inhabitants of the area has been the forests. Lumbering and pulpwood harvesting have and still are the primary source of income, with the many small farms continuing to be nothing more than residence sites in most cases.

Climate

The climate of the valley of the Arrow Lakes may be said to be semi-arid. The average mean precipitation and the average precipitation during the growing season (May to September inclusive) are given in the following table for some points along the Columbia drainage system downstream from Revelstoke. (See Table 1).

The frost-free period of the valley may be considered favorable to agriculture. At Nakusp, which will serve to exemplify the area that may be flooded by the reservoir, the frost-free period averages 133 days per year. The relatively low altitude of the valley results in a frost-free period which exceeds points at a higher elevation and generally cannot be considered a limiting factor to agriculture in the area. The comparatively low average precipitation that falls during the growing season would present limitations to agricultural production in many years unless irrigation is supplied.

Table 1.—The Average Precipitation For the Growing Season and the Year for Selected Points along the Columbia River & Arrow Lakes

| Station | Average precipitation in inches | |
|-----------------------|---------------------------------|--------|
| | May-September (inclusive) | Yearly |
| Revelstoke..... | 11.38 | 40.27 |
| Fauquier..... | 8.03 | 19.70 |
| Edgewood..... | 10.54 | 23.30 |
| Deer Park..... | 6.11 | 15.90 |
| Robson..... | 8.51 | 27.51 |
| Warfield..... | 7.71 | 25.98 |
| Columbia Gardens..... | 7.55 | 24.26 |
| Waneta..... | 7.98 | 23.56 |

Topography

The area that would be affected by the construction of the High Arrow dam lies between the Selkirk mountains on the east and the Monashee mountains on the west. The topography of the area is characterized by the long narrow valley running generally north and south from Revelstoke down the Columbia river and Arrow Lakes to Castlegar. Through most of the extent of this section of the drainage route, the mountains rise up from the valley floor or lake bottom leaving little area for agricultural development. In this section land suitable for agriculture is confined to a number of separate areas of comparatively small size. The three main areas are between Revelstoke and Arrowhead, between East Arrow Park and Goose Island and in the vicinity of Renalta.

To the north of Deer Park the forest is chiefly cedar and hemlock and in the somewhat drier region, to the south of this point, larch and Douglas fir are common with cedar in the damp depressions.

Soils

The soil material consists chiefly of fine to medium terrace sands, derived from glaciation of igneous rock formations that border the sides of the valley. There are also a comparatively small number of gravelly terraces, and some small areas of stratified silts and clays of glacial origin. Above the toe of the mountain slopes there are scattered deposits of stratified sands, gravelly till and stony outwash, the latter being in the vicinity of the tributary streams. Between

Needles and Nakusp there are a few deposits of calcareous glacio-lacustrine silts; in the vicinity of Nakusp there is a small area of soil developed on glacio-lacustrine clay.

The valley of the Inonoaklin river is floored with alluvial deposits that range in texture from fine sand and silt to gravel. The arable soils are found on fine textured deposits.

The Extent of Agricultural land¹

The agricultural land that would be affected by the construction of the proposed dam was measured by the use of topographic maps and aerial photographs. There are two broad classes of agricultural land that may be affected, namely, that which has been improved for agricultural use and that which could conceivably be used for agriculture in the future.

Before the extent of land was measured it was necessary to decide upon a present normal level of water which would serve as a base from which the water level would be considered as rising. It was also necessary to select an upper level which would serve as the height that flooding would affect.

Maximum Height of Water for Various Months

An analysis of the daily water levels for the past 29 years (1933-1961) was made for two points. One station for which data were available was Nakusp which is located on the Upper Arrow Lake and the other station was Needles located on the lower Arrow Lake. In 20 of the 29 years the maximum flow and height of water occurred during the month of June, at Nakusp, with the maximum height occurring during July in seven of the years and during May in one of the years.

The lowest maximum monthly water elevation occurred 17 of the 29 years during March and 11 years during February at Needles. One year the maximum monthly elevation was the same for February and March. Over the 29 year period the average of the maximum monthly water elevation varied from a low of 1,369.9 feet to a high of 1,395.73 feet. (See Table 2)

Table 2.—The Average of Maximum Monthly Elevations of Water at Nakusp and Needles for the Period 1933-1961

| Month | Average of maximum monthly elevations of water in feet at | |
|----------------|---|----------|
| | Nakusp | Needles |
| January..... | 1,377.55 | 1,370.86 |
| February..... | 1,376.73 | 1,369.99 |
| March..... | 1,376.68 | 1,369.90 |
| April..... | 1,382.17 | 1,374.60 |
| May..... | 1,395.58 | 1,389.88 |
| June..... | 1,400.56 | 1,395.73 |
| July..... | 1,398.26 | 1,392.35 |
| August..... | 1,393.34 | 1,386.65 |
| September..... | 1,388.19 | 1,381.52 |
| October..... | 1,384.34 | 1,376.85 |
| November..... | 1,381.88 | 1,374.77 |
| December..... | 1,379.18 | 1,372.35 |

¹ This section is based primarily upon an unpublished report "Air Photo Interpretations of the Columbia River—Arrow Lakes Area" prepared by the Air Photo Interpretation Unit of the Economics Division, Canada Department of Agriculture, January 1962.

An appreciation of the fluctuations that occur in the water level was obtained by a consideration of the distributions of the maximum monthly elevations about the 29 year average. In Table 3 the distributions of the elevations for the growing season at Nakusp is presented.

It will be noted that the maximum monthly elevations varied considerably extending over more than a ten foot range. These variations make it extremely difficult to select a representative base level from which the acreage, that will be affected if the proposed dam is constructed, may be measured.

Table 3.—Variations in the Maximum Monthly Flood Levels That Occurred at Nakusp During the 29 year period (1933-1961 inclusive)

| Height of maximum monthly flood levels in feet, above and below the 29 year average | Number of years with occurrence during | | | | |
|---|--|------|------|--------|-----------|
| | May | June | July | August | September |
| 5.5' and more above average.... | 4 | 3 | 3 | 0 | 0 |
| 4.5' to 5.5' above average..... | 4 | 2 | 1 | 0 | 0 |
| 3.5' to 4.5' above average..... | 0 | 1 | 1 | 2 | 1 |
| 2.5' to 3.5' above average..... | 0 | 1 | 2 | 2 | 2 |
| 1.5' to 2.5' above average..... | 6 | 3 | 0 | 2 | 1 |
| 0.5' to 1.5' above average..... | 0 | 3 | 4 | 6 | 5 |
| average flood level \pm 0.5'..... | 2 | 2 | 3 | 3 | 8 |
| 0.5' to 1.5' below average..... | 1 | 2 | 5 | 5 | 7 |
| 1.5' to 2.5' below average..... | 2 | 2 | 2 | 8 | 5 |
| 2.5' to 3.5' below average..... | 2 | 2 | 3 | 1 | 0 |
| 3.5' to 4.5' below average..... | 0 | 4 | 3 | 0 | 0 |
| 4.5' to 5.5' below average..... | 2 | 2 | 1 | 0 | 0 |
| 5.5' and more below average.... | 6 | 2 | 1 | 0 | 0 |

Selection of a Base Level for Measurement

The data available permitted a review of the elevations of water on the dates that aerial photographs were taken. The latest photographs which enable a complete coverage of area were taken at differing times. The flights were flown during 1951, 1952, 1953 and 1959. Photographs from each of these four years were required to give a complete coverage. In Table 4, the water elevations for differing stations are reported for the dates the photographs were taken. The average water elevation at Nakusp for the days the photographs were taken was 1,391 feet. This average is somewhat less than the average maximum monthly elevation at Nakusp for the 29 year period, which was 1,395.19 feet during the growing season. Considering the wide variations that exist in the yearly and monthly peaks of water elevation, it was decided that as a base that the water levels shown on the photographs were not impractical. The selection of this level as a base results in a slightly larger measured acreage than would be the case if the average figures were selected. In selecting this base, it is pointed out that in some years part of the measured land area would be flooded.

Table 4.—Elevation of Water on the Date the Photographs were taken for Differing Stations

| Year | Month and Day | Water elevation in feet at | | |
|------|-------------------|----------------------------|----------|---------------|
| | | Nakusp | Needles | 12 mile Ferry |
| 1959 | July 11..... | 1,398.26 | 1,393.78 | 1,408.16 |
| 1953 | August 15..... | 1,390.39 | 1,383.57 | 1,402.82 |
| 1953 | September 14..... | 1,386.96 | 1,379.71 | 1,401.00 |
| 1952 | September 14..... | 1,383.67 | 1,376.60 | 1,396.69 |
| 1951 | July 30..... | 1,395.04 | 1,389.62 | 1,407.06 |
| 1951 | August 4..... | 1,392.09 | 1,388.12 | 1,405.86 |

Selection of an Upper Level for Measurement

It was decided to measure in detail, the agricultural and potential agricultural acreage that would be affected, and to define this acreage as being between the level of water shown on the aerial photographs and the 1,460 foot contour. Recognizing, that if the proposed dam is constructed, that water would only reach a maximum elevation of 1,446 feet, the difference in the agricultural acreage between the 1,446 feet and the 1,460 feet level was also measured.

Acreage of Agricultural Land

Agricultural land below the 1,460 foot contour was classified according to use and its acreage measured through air photo interpretation and measurement. Agricultural land that could be affected by the proposed flooding (below 1,460 feet) was classified into orchard land, idle orchard land, other improved cropland (which included the acreage of farmstead sites), other improved cropland acreage that was idle and aquatic hays and pastures (presently subject to flooding in some years). In addition a limited acreage of agricultural land above the 1,460 foot level was also included because the proposed flooding would cause it to become isolated. Both groups of agricultural land had an extent of 5,893 acres. (See Table 5).

Table 5.—The Acreage of Agricultural Land Below the 1,460 Foot Contour Level and Would-be-isolated Agricultural Land Above the 1,460 Foot Contour Level

| Land use classification | Acreage |
|---|---------|
| Orchard..... | 200 |
| Idle Orchard..... | 43 |
| Other cropland..... | 4,850 |
| Idle other cropland..... | 390 |
| Aquatic hay and pasture..... | 372 |
| Isolated orchard land above 1,460 feet..... | 6 |
| Isolated other cropland above 1,460 feet..... | 32 |
| | 5,893 |

Acreage of Potential Agricultural Land

The acreage of land which is viewed as being physically but not necessarily economically suitable for agricultural use was classified as being of three types—unimproved acreage (land that has been cleared but having no other improvements), lightly wooded (consisting of land that is sparsely forested or forested with growth having trees with less than 6 inch butts), and heavily wooded lands (forested with trees with more than 6 inch butts). In addition to these categories of potential agricultural land there were limited acreages of potential agricultural land above the 1,460 foot level which would be isolated as a result of the reservoir development. The total of this class of potential agricultural land was measured at 12,880 acres. (See Table 6).

Two other classes of land were also interpreted and measured. These were lands that would require construction of dikes and/or drainage works as well as clearing of heavy forest growth, and lands having a very low potential rating, such as lands that would become small islands under the proposed

water level. The acreage of the potential land that would require engineering works amounts to 717 acres and the land classified as having a poor potential has an acreage of 2,410 acres.

Table 6.—The Acreage of Potential Agricultural Land Below the 1,460 Foot Contour Level and Would-be-isolated Potential Agricultural Land Above the 1,460 Foot Contour Level

| Land use classification | Acreage |
|--|---------|
| Unimproved..... | 719 |
| Lightly wooded..... | 1,398 |
| Heavily wooded..... | 10,573 |
| Isolated unimproved..... | 6 |
| Isolated lightly wooded..... | 123 |
| Isolated heavily wooded..... | 61 |
| Total potential agricultural land..... | 12,880 |

Total Acreage Affected

In total the maximum acreage of land that could be considered as agricultural or potentially agricultural would not exceed 21,900 acres. A more realistic figure after considering the definitions of some of the categories measured would certainly be considerably lower.

It may also be more realistic to consider the acreage affected as being reduced further inasmuch as the flooding of the reservoir would only reach the 1,446 foot level. If this figure were considered more applicable a reduction of 1,055 acres could be made in the total figure. This reduction is composed of 473 acres of cultivated agricultural land above the 1,446 foot contour that would not be flooded and 582 acres of potential agricultural land having the same elevation.

Number of Farms Affected

According to the most recent aerial photograph coverage of the area there are 260 farmsteads that would be affected if land up to the 1,460 foot level is required for the reservoir construction. A distribution of these farmsteads by the amount of improved acreage they operate below the 1,460 foot level indicates the smallness of the acreage that will be affected for most farms. (See Table 7).

Table 7.—Distribution of Affected Farms According to the Acreage of Improved Land Below the 1,460 Foot Contour

| Acreage of improved land below 1,460 Feet | Number of Farms |
|---|-----------------|
| 1 to 30 ¹ | 215 |
| 30 to 60..... | 34 |
| 61 to 100..... | 10 |
| 100 to 165..... | 1 |
| Total..... | 260 |

¹ Includes one would-be-isolated farmstead above the 1,460 foot contour.

Agricultural Potential

This report is based on information available from various sources. Detailed soil and other surveys have not been made. The information available and the judgment of some who are familiar with the area suggest the following: A comparatively small acreage has been improved over the past 50 years. If a substantial economic potential had existed in the valley for agricultural development there would have been more improvements than have taken place to date. If the dam is not constructed, it is most unlikely that agriculture would prosper in this area in the foreseeable future. The exceedingly high cost of land clearing in the area, the limited precipitation, making irrigation a requirement for intensive cropping, the susceptibility of the valley to diseases of fruit trees, the presence of many soils of low inherent fertility, and the limited acreage of land, all indicated limited possibilities for the further development of the land for agricultural purposes.

HOUSE OF COMMONS

Second Session—Twenty-sixth Parliament

1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 5

MONDAY, APRIL 13, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESS:

The Hon. R. G. Williston, Minister of Lands, Forests and Water Resources,
Province of British Columbia.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--------------------------------|----------------------------|----------------|
| Brewin, | Fleming (<i>Okanagan-</i> | Macdonald, |
| Byrne, | <i>Revelstoke</i>), | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Forest, | Martineau, |
| Cameron (<i>Nanaimo-</i> | Gelber, | Nielsen, |
| <i>Cowichan-The Islands</i>) | Groos, | Patterson, |
| Cashin, | Haidasz, | Pennell, |
| Casselman (Mrs.), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Langlois, | Turner, |
| Dinsdale, | Laprise, | Willoughby—35. |
| Fairweather, | Leboe, | |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

MONDAY, April 13, 1964

(9)

The Standing Committee on External Affairs met at 4 o'clock p.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Byrne, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Gelber, Groos, Haidasz, Herridge, Kindt, Laprise, Leboe, Macdonald, MacEwan, Matheson, Nielsen, Nesbitt, Patterson, Pugh, Ryan, Turner, Willoughby (27).

In attendance: Representing the Province of British Columbia: The Hon. R. G. Williston, Minister of Lands, Forests and Water Resources; The Hon. R. W. Bonner, Q.C., Attorney General; Mr. A. F. Paget, Deputy Minister of Water Resources; Mr. Gordon Kidd, Deputy Comptroller of Water Resources; Mr. H. DeBeck, Water Resources Branch.

The Chairman presented the Third Report of the Subcommittee on Agenda and Procedure, dated April 13, 1964, which recommended as follows:

1. That the undermentioned witnesses, who have already been invited to appear, be asked to attend on the dates mentioned:

General A. G. L. McNaughton—April 20, 21 and 22nd.

H. G. Acres and Company, Niagara Falls, and Montreal Engineering Co. Ltd.—April 23rd.

Caseco Consultant Limited and C.B.A. Engineering Co. Ltd., both of Vancouver, April 24th.

(The four above-mentioned engineering firms to be asked to be available from Wednesday, April 22nd).

F. J. Bartholomew, Electrical Engineer, Vancouver—April 27th.

Representatives of Consolidated Mining and Smelting Co. of Canada Ltd., Trail, B.C.—April 28th.

2. That Mr. Larrett Higgins, Toronto, be invited to attend the committee on April 29th.

On motion of Mr. Herridge, seconded by Mr. Fleming, the above report was approved.

The Chairman advised that since the last meeting correspondence pertaining to the Columbia River Treaty and Protocol has been received from the following: Mr. P. R. Crebbin and Elsie Longden, Nelson, B.C.; Elijah Balaam, Burton, B.C.; Mrs. Hilda J. Peterson, Merritt, B.C.; Miss A. B. Dalziel, Saanichton, B.C.; British Columbia Federation of Labour, Vancouver, B.C.

The Chairman introduced the witnesses and Mr. Williston read a statement prepared by the Government of the Province of British Columbia.

On motion of Mr. Davis, seconded by Mr. Haidasz,

Resolved,—That the attachments to the brief presented by Mr. Williston be printed as an appendix to today's Minutes of Proceedings. (*See Appendix E*).

At 5.45 p.m., on motion of Mr. Turner, the Committee adjourned until Tuesday, April 14, 1964, at 10.00 a.m.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

MONDAY, April 13, 1964

The CHAIRMAN: Gentlemen, I see a quorum. The meeting will commence. I have a report of the subcommittee on agenda and procedure. I would like to report that your subcommittee on agenda and procedure met at two o'clock this day and have agreed to recommend as follows:

(See minutes of proceedings)

May I have a motion to approve this report?

It is moved by Mr. Herridge, seconded by Mr. Fleming (Okanagan-Revel-stoke). All those in favour?

Motion agreed to.

Gentlemen, some correspondence has been received since our last meeting from: P. R. Crebbin and Elsie Longden, Nelson, British Columbia; Elijah Balaam, Burton, British Columbia; Mrs. Hilda J. Peterson, Merritt, British Columbia; Miss A. B. Dalziel, Saanichton, British Columbia; British Columbia Federation of Labour, Vancouver, British Columbia.

I now have the honour to introduce as your guest today British Columbia government witnesses. First of all let me introduce to you the Hon. R. J. Williston, minister of lands, forests and water resources, then the Hon. R. W. Bonner, the attorney general of the province of British Columbia, and also in attendance we have Mr. A. F. Paget, deputy minister of water resources, Mr. Gordon Kidd, deputy comptroller of water resources and Mr. H. DeBeck, from the water resources branch. These are our witnesses today. Our first speaker will be Mr. Williston.

Hon. R. G. WILLISTON (*Minister of Lands, Forests and Water Resources, Province of British Columbia*): Mr. Chairman and honourable members of the committee on external affairs, first, in preface, may I say I regret the fact that we were unable to have our presentation this afternoon translated into French to accompany the English copy. Your Chairman did request that I provide such material, but our brief has only been finalized as of this morning and we did not have such services available to us prior to leaving the west coast. So, sir, it is no affront to your committee; it is just the fact that it was simply impossible for us to meet your request, and I hope you accept it on that basis.

Mr. FAIRWEATHER: Mr. Chairman, what is the minister's intention? Does he propose to read the whole brief?

Mr. WILLISTON: Yes, sir.

Mr. FAIRWEATHER: I do not see why we should not have it approved as read.

Mr. HERRIDGE: I might say that in fairness to the minister we have not had this brief, as we had others, for sufficient time before us. In order to understand the brief today and to be able to ask questions I think the minister should be allowed to read the brief.

The CHAIRMAN: Mr. Williston, I should like to explain the intervention by Mr. Fairweather. It is pursuant to an earlier agreement this committee had reached that we would be generally saving the time of the external affairs committee and permitting more time for questioning if we were able to

receive statements from witnesses well in advance so that members could study them and perhaps after a preliminary explanatory preface by each speaker really question the witnesses who appear before us. However, in the light of the circumstances that have developed and the difficulty of producing this paper, I am in the hands of the committee. Mr. Fairweather suggested that we shorten this, while Mr. Herridge feels that in the circumstances we should permit the minister to present his own case in his own way.

Mr. FLEMING (*Okanagan-Revelstoke*): I feel that it is essential to have the brief read to us. We can hardly proceed with the questioning simply by leafing through this document. We should hear the presentation. How else can we carry on through the rest of the afternoon if we do not have the statement read?

The CHAIRMAN: Does that represent the feeling of the committee?

Mr. BYRNE: With due respect to Mr. Fairweather, this is the only procedure we could follow unless we were to adjourn and allow members of the committee to read the brief.

The CHAIRMAN: Is that agreed?

Mr. KINDT: There is one other point, Mr. Chairman. Would the representative from British Columbia mind answering questions as we go along, or would he rather not be disturbed and make his presentation and then allow questions afterwards?

Mr. WILLISTON: I am in the hands of the committee; if you want to ask questions as I go along, I am quite willing to proceed in this manner.

Mr. PATTERSON: When the presentation brief was presented to us it was understood that it would be completed first and that questions would be asked afterwards. I suggest we follow this procedure.

Mr. KINDT: This was not a general statement; it applied only to Mr. Martin, the Secretary of State for External Affairs. This would be a new decision, whether we should ask questions as the brief is being presented or whether we should wait until the end. The matter has not been decided.

The CHAIRMAN: If it would please the committee, it would certainly be to my satisfaction if we could permit the minister to present his paper uninterrupted, which would perhaps enable members to make notes on their questions. I would certainly endeavour to make sure that no one is overlooked. Perhaps thereafter questioning could proceed in the same sequence as the brief itself, if that would be possible.

Mr. HERRIDGE: I think that is the best procedure.

The CHAIRMAN: It is agreed that the brief will be read first and questions will be asked afterwards.

Mr. WILLISTON: I apologize for the length of the document but certainly British Columbia's position is presented in the document and I know of no other way to accomplish that end.

In appearing before you today, on behalf of the government of the province of British Columbia, I would first remind you of the vast amount of work which has been done in investigating the water resources of the tremendously important Columbia river system, both in Canada and the United States. Alternatives to the proposals now before you for development of the Canadian portion of this river system have been examined in great detail and have been rejected for economic or social reasons. British Columbia now represents to you that the system of projects set forth by the treaty follow logically from these investigations and is in the best interests of Canada. British Columbia is in agreement with the treaty and the protocol thereto and recommends to this committee that favourable consideration be given to these documents.

It is now more than three years since the Columbia River Treaty was signed in Washington, D.C., by the respective heads of the governments of Canada and the United States. The treaty was then speedily approved by the United States government while in Canada much misunderstanding and misinformation developed which created a poor environment in which to further federal-provincial co-operation. As a first step towards ratification it was obviously necessary to arrive at an agreement between Canada and British Columbia setting out the respective obligations and responsibilities of both governments under the treaty.

Real progress was not made until last year. As a result of the acceptance of a Canada-British Columbia Agreement for the implementation of the treaty, together with the negotiation with the United States for a protocol to modify and clarify some terms of the original document both governments are now of one mind and so can urge acceptance of the proposals presented. A vital part of this protocol embodies the basis for sale of the downstream power benefits and is represented by the attachment relating to terms of sale.

It is perhaps unfortunate that the documents involved with the Columbia river development are both so complex and technical. However, British Columbia believes the arrangements reached represent a truly great accomplishment in international co-operation and understanding. We believe the planned developments bring great advantages to the people of British Columbia as well as to all in Canada and the United States. It is our sincere hope that rapid progress can be made to obtain the approval of the federal parliament so that this beneficial joint project can proceed as presently planned.

In this presentation it is not the intention to dwell on the actual negotiations that took place in connection with the Columbia River Treaty and protocol. These have been explained in some detail by the Honourable Paul Martin and there is no need to repeat. It is, however, considered essential for British Columbia to record its responsibility for the sequence of events that took place, particularly after the time the treaty was signed by the heads of the governments of Canada and the United States in January, 1961.

While the negotiations with the United States for joint river development were the responsibility of Canada, British Columbia, as the owner of the water resource, had to be closely and continuously involved. To assure complete exchange of views and to make joint decisions relating to aspects of the negotiations as they proceeded, the Canada-British Columbia policy liaison committee was formed. It had representation composed of Federal and Provincial ministers and senior officials. The committee was supported by a technical liaison committee composed of engineers, lawyers and economists from the two governments. This technical group carried out specific studies for the policy committee and advised it as requested. The detailed nature of the work required the constant application of this group for a prolonged period including assisting the Canadian negotiating team during its deliberations with the United States.

Within the liaison committee there was a complete and free exchange of views at all times. Policy decisions were agreed on only after careful review. The negotiators were kept fully advised of the views of the government of Canada and the province of British Columbia as the deliberations progressed. The happy result was the signing of the Columbia River Treaty on January 17th, 1961.

One requirement essential to the successful implementation of the treaty had not been resolved. This was the necessary agreement between the governments of Canada and British Columbia on the obligations and responsibilities that would have to be accepted under the treaty. The government of British Columbia made it clear that a satisfactory agreement must be reached

before the province would be prepared to proceed with the development. A major factor was the financial liabilities involved, which in British Columbia's opinion could be overcome, at least in part, by sale of the surplus downstream benefits in the United States. Failing this, financial guarantee or financial participation by the federal government was required to ensure that the people of British Columbia would not suffer economic loss. At this point liaison between the then federal government and the government of British Columbia broke down. However, in time the Conservative federal government did change its views with regard to the sale of surplus downstream benefits in the United States and advocated that Canada's traditional power policy be changed to allow the export of surplus Canadian generated energy. Before these new policies could be implemented, the present Liberal administration took office.

Many critics, political and otherwise, have suggested that British Columbia was responsible for delaying the treaty. This is not true. It would have indicated serious irresponsibility to have proceeded with the treaty implementation without clearly setting out the responsibilities of both our governments. Furthermore, our negotiating position with the United States with respect to sale of surplus downstream benefits was impossible without a united approach. British Columbia is pleased that the present Government took quick and decisive action in the last year to bring the treaty negotiations to their present position.

As mentioned previously, it was apparent after the signing of the treaty in January, 1961, that action towards ratification of the treaty by Canada would be slow. In spite of this, British Columbia believed that the treaty was basically good and that it would be approved at some appropriate time. It was recognized that a great deal of engineering had to be accomplished before the dams could be constructed and that the time allowed for such work in the treaty was short. British Columbia immediately proceeded with the required engineering work on the firm belief that the money and effort spent would not be wasted.

Responsibility for the design and construction of the dams was given to the British Columbia Power Commission. Responsible officers immediately retained the best consulting engineering brains available in Canada to carry out the detailed site investigations and to prepare design plans. These consultants are as follows:

- Duncan Lake Dam—Montreal Engineering Company Limited
- Arrow Lake Dam —C.B.A. Engineering Company Limited
- Mica Dam —Caseco Consultants Limited, a consortium composed of H. G. Acres Company, Shawinigan Engineering Company and Crippen Wright Engineering Company.

After these companies had made their preliminary reports, the Power Commission made applications for water licences. These were granted, after careful review of all the conflict of opinions. Those water licences are appended to my brief, which is in your hands. Conditions in the licences retain to the government of British Columbia certain decisions relating to such matters as reservoir clearing.

The engineering investigations and studies have been pressed forward during the intervening years since early 1961 and the British Columbia entity is in an excellent position to meet the construction time schedules specified in the agreement of sale for the downstream power benefits. In many ways the delayed action on the treaty has been a blessing in disguise because it has given additional time to engineer, in detail, all projects so there need be no undue haste to meet the construction schedule outlined in the treaty.

The Duncan Lake project is in a position where bids could be called immediately and construction could commence very soon thereafter. Final engineering plans and specifications have been completed.

The Arrow Lakes project is in a similar position.

The Mica project is not as critical with respect to the time allowed for construction under the terms of sale. The engineering carried out to date would make it possible to meet the schedules easily, since designs are well advanced and final plans and specifications will be completed during the year.

In total, the British Columbia Hydro and Power Authority has spent over \$10 million for engineering studies and investigations in preparation for construction of the treaty projects. This alone should provide conclusive proof that British Columbia had complete faith that the treaty would proceed, and has made every effort to be in as favourable a position as possible to meet the commitments with respect to construction of the project.

There follows, Mr. Chairman, a table which is in the blue book which the members have. There would be no purpose served by saying anything about that information; it is presently before the committee. I will pass over that.

COLUMBIA RIVER TREATY PROJECTS

GENERAL AND PHYSICAL CHARACTERISTICS

| Project | Arrow Lakes | Duncan Lake | Mica Creek |
|---|------------------------------------|----------------------------------|--------------------------------------|
| Location..... | 5 miles upstream from Castlegar | Outlet of Duncan Lake | 90 miles upstream from Revelstoke |
| Consultants..... | CBA Engineering Co. Ltd. | Montreal Engineering Co. Ltd. | Caseco Consultants Ltd. |
| Drainage Area..... | 14,100 sq. miles..... | 925 sq. miles..... | 8,220 sq. miles |
| Average Flow..... | 39,800 c.f.s..... | 3,600 c.f.s..... | 20,700 c.f.s. |
| Max. Recorded Flow..... | 220,000 c.f.s..... | 21,400 c.f.s..... | 112,000 c.f.s. |
| Min. Recorded Flow..... | 4,800 c.f.s..... | 268 c.f.s..... | 2,140 c.f.s. |
| Dam Type..... | Earthfill..... | Earthfill..... | Earth and Rockfill |
| Dam Height (to foundations)..... | 190 feet..... | 120 feet..... | 645 feet ± |
| Max. Gross Head of Water..... | 75 feet ±..... | 110 feet ±..... | 570 feet ± |
| Dam Crest Length..... | 2,850 feet..... | 2,600 feet..... | 2,500 feet ± |
| Dam Volume..... | 8,500,000 cu. yds.... | 6,400,000 cu. yds.... | 37,000,000 cu. yds. |
| Live Storage Capacity..... | 7,100,000 ac. ft..... | 1,400,000 ac. ft..... | 12,000,000 ac. ft. |
| Length of reservoir..... | 145 miles..... | 28 miles..... | 85 miles |
| Completion period after ratification | 5 years..... | 5 years..... | 9 years |
| Flood control payment in U.S. Dollars..... | \$52,100,000..... | \$11,100,000..... | \$1,200,000 |

A great deal of unnecessary misunderstanding has existed over the past three years with regard to the objectives of British Columbia towards the development of the Columbia river. This is surprising, because the objectives of the province during the whole period of the investigation of the joint development of the Columbia river and the negotiation of the treaty and protocol have been quite simple and fundamental; namely, to provide for the maximum economic development of the Columbia in Canada; to obtain the largest possible share of downstream benefits in the United States which would result from the development of the Columbia river in Canada, while retaining control of the

Columbia river and its tributaries for future Canadian requirements; and to achieve these objectives with the minimum disturbance to existing settlement, transportation facilities and resource values. These, of course, are the objectives of Canada as well as of British Columbia and it is fair to say that there has never been any substantial disagreement at the technical level on the means by which these objectives should be ensured. It is the firm conviction of British Columbia that these objectives have been achieved, in an outstanding degree, by the treaty with its attendant protocol and attachment relating to terms of sale.

It has been charged that the treaty plan is the "second best plan" for Canada. This charge is quite evidently based on the belief that the biggest plan is the best plan, and this belief, in turn, rests on the conviction that hydro power possesses some special and irreplaceable value. This is not so, although British Columbia, with its vast resources of undeveloped water power wishes earnestly that this were true. To reach an understanding of the best plan for Columbia river power development in Canada, it is necessary to examine the problem in the context of British Columbia's vast resources of undeveloped hydro power and the impact on these resources of modern developments and prospective advances in the technology of power. It is necessary, in other words, to relate the programme for the development of the Columbia river to the whole concept of British Columbia power policy in the modern world.

Much of the traditional Canadian thinking about hydro power was developed more than forty years ago, and was soundly based on the state of power technology of the time. Generation of power by means other than hydro was both costly and unreliable; long-distance transmission of power was not practical. The growth of communities and industries appeared to depend on the availability of hydro power close at hand. Since hydro resources close at hand were quickly used up in most developed areas, hydro power did indeed possess a special quality at that time; this quality was its unassailable economic advantage over other sources of power supply.

Gradually, over the years, this advantage has been eaten away by improvements in the design of thermal plants accompanied by the reduction in cost of thermal energy, and by improvements in power transmission which have resulted in the interconnection of electrical load areas and generating plants in grid patterns of transmission. A great deal of this technical change has taken place in the twenty years which have elapsed since the original Columbia river reference was made to the International Joint Commission. As always, traditional thinking has lagged far behind technological change, so that Columbia river treaty negotiations were approached with this thinking process in Canada still unswayed by modern technology. Some of this traditional thinking is still evident in Canada today.

There is no justification for formulating power policy on the belief that the processes which have displaced hydro power from the unique position which it formerly occupied will not continue into the future. Nuclear power has yet to fulfil its early promise, but technical advance in this field appears inevitable, and a time may be anticipated when nuclear fuel rather than coal or natural gas might be the economic competitor with hydro power in British Columbia. The province has known undeveloped hydro resources amounting to 22 million kilowatts of prime power which, considering load factor and reserve requirements, would support the installation of an additional 37 million kilowatts. This amounts to nearly fifteen times the total of present hydro installations in British Columbia, and nearly seven times the hydro potential of the Columbia river basin in Canada, under the maximum Kootenay river diversion plan. The inventory of British Columbia's hydro resources is

still far from complete, and there is reason to believe that the final figure will be between two and three times the present figure for known hydro power resources.

However, a portion of this vast hydro power resource may already have been lost if it cannot be developed at a cost competitive with its thermal alternative. Further portions of this resource will be less competitive over the years when other sources of power technology improves, so that a point in time may be anticipated at which further hydro developments for base load purposes will become uneconomical. There is every reason to believe that the level of hydro development reached at that time will represent far less than full utilization of hydro power resources of British Columbia. It is considered that for peaking and load shaping, hydro power will have a use far into the future, and hydro which has already been developed will continue to serve us with its value enhanced in the mixed hydro-nuclear system which is likely to develop. However, much potential hydro power may never be exploited and may be expected to be lost as a resource.

These are the basic realities, then, from which British Columbia's policy relating to power development has been developed, and this is the context in which alternative proposals for the power development of the Columbia basin in Canada must be weighed. British Columbia power policy has three main objectives:

1. To develop British Columbia's economic hydro power resources as rapidly as possible, by encouraging increased use of electrical energy in the province and by seeking markets elsewhere in Canada and in the United States.
2. To reduce the cost of electrical energy in British Columbia to the greatest extent possible, by developing the best projects and sequences of projects first.
3. To achieve these objectives with a minimum of displacement of population, disruption of transportation facilities and destruction of other resources.

The plan of development made possible by the treaty is outstandingly successful when judged by these standards. However, the alternative plan of maximum Kootenay river diversion, which will be discussed more fully later is quite unacceptable by the same standards because its only difference from the treaty plan, in terms of power generation in Canada, is its ability to provide about 10 per cent more power which, if considered incrementally, has a cost that is far too high to be acceptable to British Columbia either now or under any future conditions which could be anticipated. Furthermore, the reservoirs required to achieve this incremental power would result in flooding losses and disruption far exceeding those involved in any other projects in British Columbia either existing or proposed. The maximum diversion plan is thus seen to be in direct conflict with sound provincial power policy. To claim this as the best policy for Canada is to demonstrate an allegiance to a traditional thinking which has not been supported by the facts of power technology for the last 20 years.

A great deal of attention has been directed, in some quarters, to the choice of the series of projects ultimately embodied in the treaty, as compared with an alternative series of projects which would have created the maximum possible diversion in Canada of the Kootenay river. This maximum diversion plan had two features which commanded attention: it provided maximum at-site generation in Canada, and was the least favourable plan for the generation of power in the United States because it eliminated the Libby project. It became apparent during the negotiations that the downstream benefits which

could be negotiated for the east Kootenay storage would have been very small because the last few million acre feet of storage added to the system would, in fact, have provided very small additional benefits to the downstream system. Apart from this effect, it also became apparent that the maximum diversion plan could not be negotiated into a treaty at all on terms acceptable to Canada because the United States was most reluctant to negotiate on downstream benefits from such a proposal; except on the basis that Canada would supply them with 275,000 kilowatts at their system cost of 2.5 mills per kilowatt hour to make up for the potential of Libby which would have been lost to them. This proposal was not acceptable to British Columbia or Canada. However, the point which must be stressed here is that the maximum diversion plan was not abandoned solely because it would have produced less favourable downstream benefits, although this was found to be the case, but because this plan was unattractive to British Columbia in terms of the economics of at-site generation in Canada. The additional power which could be generated at-site in Canada, by means of this plan, would amount to about 10 per cent of the total power output of the Columbia river and its tributaries in Canada; but the incremental cost of the added power would have been so high that it would have been quite uncompetitive with power from other sources in British Columbia, either thermal or hydro. The reason for the high incremental cost of this power is inherent in the physical features of the maximum diversion plan, which requires, in addition to the projects now included in the treaty plan, three major dams and a major pumping plant in the Columbia-Kootenay valley, together with the flooding of more than 70,000 acres of additional land. The flowage costs imposed by the east Kootenay reservoirs were estimated in 1958 at nearly 60 million dollars.

The cost estimates available for these projects were sufficient to establish the economic weakness of the maximum diversion proposal, although British Columbia has always had strong reservations regarding the reliability of the estimates of cost for the Dorr and Bull river dams, for which sub-surface explorations appeared insufficient to establish dependable estimates of cost. In the case of the Dorr dam, which was to be more than 150 feet high, only two exploratory holes were drilled, one 37 feet deep and the other 239 feet deep, but neither hole encountered rock. Similar reservations were felt with regard to the estimates of cost for the compensation and relocation required by the maximum diversion scheme, and the validity of this concern is indicated by subsequent experience with the Arrow lakes project, for which revised estimates for flowage costs have contributed a substantial part of the increase in the present estimate of project costs.

Much of the misunderstanding which has existed with regard to the merits for Canada of alternative schemes for Columbia river development appears to be due to misinterpretation of the 1959 report of the international Columbia river engineering board. This report was never intended to serve as a basis for the selection by Canada of the best sequence of Columbia river development from the point of national interest. The report was quite unsuited for this use by the time it was published because it was based on the consideration of the basin as a whole without regard to the existence of the international boundary, and because it considered all projects as being in existence at the time they were being compared. A practical consideration of Canadian interests cannot ignore the existence of the international boundary, nor can a study of the economics of the alternatives open to us ignore consideration of practical sequences of project development. For these reasons, British Columbia's policy has been largely based on the report completed in January 1959, for the comptroller of water rights of British Columbia, by Crippen Wright Engineering Limited of Vancouver. This was a very comprehensive report in nine volumes,

in which a very large number of alternatives for the development of the Columbia and Kootenay rivers in Canada were examined. The report was made available to the government of Canada immediately on its completion, but in view of its importance in negotiations, it was necessarily kept confidential until the completion of negotiations. The influence of the Crippen Wright report on the system of development finally incorporated in the treaty, as well as on other aspects of provincial power policy, can be judged by reference to the section of the report entitled "Summary of Principal Recommendations" contained on the last three pages of the report. Study of alternative means of developing the Columbia did not cease with the Crippen Wright report, however, but continued through the whole period of treaty negotiations, during which period more than 30 different sequences of projects, involving alternative plans of development, were examined by provincial engineers alone. There is therefore no basis for the belief that one of two alternative plans for the development of the Columbia basin in Canada was chosen by British Columbia on a casual or arbitrary basis.

The economic shortcomings which finally led to the rejection of the maximized Kootenay river diversion concept by British Columbia were twofold. Firstly, there was the direct economic comparison between alternatives, by which it was found that the additional increment of power which could have been made available by the maximum diversion of the Kootenay instead of the alternative finally embodied in the treaty would have been too costly to be justified. Secondly, there was the economic loss which would have resulted from the flooding of an additional 70,000 acres in the upper Kootenay and Columbia valleys, and the imposition of a water barrier to eastwest transportation, extending more than 150 miles from near the international boundary to Luxor. Recreational and wildlife resources, which are still at a very early stage of exploitation, would have been seriously affected. The big game resource, in particular, which is estimated to represent an annual recreational expenditure of about \$8 million, would have been seriously affected by the loss of the essential winter range area lying in the valley bottom within the areas which would have been flooded by the east Kootenay reservoir.

The lack of economic justification for the maximum diversion project made it difficult for British Columbia to accept the adverse social consequences involved in the forced removal of much of the population of the east Kootenay valley, estimated in 1959 at 1600 people. In the case of the Arrow lakes reservoir, the displacement of a similar number of people was accepted reluctantly, because High Arrow was considered to be the key to the safeguarding of Canadian use and control of the Columbia river system, and because its economic merit was too great to be ignored. The east Kootenay reservoir would have flooded more than three times the area to be flooded by the Arrow lakes reservoir; would have presented greater transportation problems and would have destroyed recreational and wildlife resources which were already more highly developed than those of the Arrow lakes area. Because the jurisdiction over these resources and the responsibility for the highway system are provincial responsibilities, the government of British Columbia was acutely concerned about the consequences of the maximum diversion plan, and when it became apparent that there was no economic justification for this plan, it became British Columbia's responsibility to reject it.

There are those who will argue that to abandon 10 per cent of the ultimate hydro-electric potential of the Columbia river on economic grounds, or indeed on any grounds at all, is to abandon a vital national interest, and amounts almost to treason.

My colleague, the Attorney General, would have me change the word "treason"—you can see this is a layman's presentation. However, it stands.

Such a view is based on a lack of understanding of present power technology and its economic consequences, quite apart from the fact that in the case of the Kootenay river diversion, the right to the eventual recapture of this power potential is guaranteed by the Columbia Treaty, a guarantee which does not exist under the Boundary Waters Treaty of 1909. In every hydro power project or series of projects, a decision must be made as to the physical limits of the development, and unless such decision is governed by considerations other than power, there is no better basis for decision than sound economic analysis. Every such decision results in the abandonment, usually beyond possibility of recall, of a final increment of power, the attainment of which is technically feasible but economically undesirable. Such a decision was made just over a year ago in the case of the Portage mountain dam which is now under construction on the Peace river, when it was decided to reduce the height of the dam by 50 feet because the added increment of power attained by this last 50 feet of height would have been too costly to justify its acceptance into the system. This decision resulted in a reduction of about 8 percent in the ultimate power output of the project and this part of the power potential of the Peace has been lost beyond reasonable hope of recovery. This has been accepted as a reasonable determination, and this decision has not been challenged. Because the jurisdiction over the water resource rests with the province, and because British Columbia has accepted the responsibility for the development of the Columbia arising from the treaty, the responsibility for the vital decision as to the economic limit for the development rests with the province, and British Columbia has accepted this responsibility and made this decision after the most searching engineering investigation in the history of British Columbia.

There has been much discussion concerning a low Arrow lake dam as an alternative to the present proposals, and much purportedly informed opinion has been expressed in favour of such an undertaking. Most of this opinion centres around the maximizing of power generation in Canada by the diversion of the whole Kootenay river. The Arrow lake project for this plan was considered to utilize a structure near Murphy creek to an elevation of about 1,402 feet. At this level there are no downstream flood benefits and only very minor power benefits to be derived in the United States from the project and the Murphy or low Arrow project at elevation 1402 must be looked on as a fairly expensive hydro plant, not of use until the upstream storages (and head plants) in Canada are completed. In fact, to reach any useful amount of storage for flood regulation benefits or power, a structure in excess of elevation 1,410 feet must be considered. At this elevation, serious flooding has taken place over the whole foreshore area of the Arrow lakes and if the structure were at Murphy creek, the communities of Castlegar and Robson would be in serious difficulties. The plant would also create tail water problems at Brilliant dam. It must also be kept in mind that the inflow below Mica creek to the Columbia is very large, about one-half of the water flowing from the Arrow lakes originating in this section, and a low dam would not regulate this flow for downstream benefits to any appreciable degree.

It is largely in the matter of national advantage that the Arrow lakes are most useful as a reservoir. With little head left between the Arrow dam site and the international boundary, it is possible to regulate the releases with maximum advantage to the U.S. and the minimum disadvantage to Canada. When Mica is machined and we wish to take advantage of the proviso in the treaty, referring to withdrawal of storage, in order to achieve optimum at-site generation, we can do so quite readily by making adjustments in storage release at Arrow. In other words, we retain the fullest possible flexibility in our own system and at the same time fulfil U. S. requirements for power and flood control regulation.

The Murphy creek project can still be constructed at some time in the future, if it is economically feasible, in order to take advantage of the regulation provided by all upstream storages, including releases from Libby.

Apart from the actual choice of the projects for inclusion in the treaty, probably the greatest source of controversy concerning the treaty arrangements has been the decision to sell the downstream power benefits in the United States for the first thirty years of operation of each of the Canadian storage projects. The treaty had been negotiated on the assumption that the power benefits would be returned to Canada but the sale of these benefits in the United States is provided for by article VIII (1) of the treaty, and in accordance with the wishes of the government of British Columbia, who have accepted complete financial responsibility for the implementation of the treaty, arrangements for this sale have been made prior to ratification of the treaty.

Much detailed description has already been given to this committee in the presentation of the government of Canada concerning the nature and characteristics of the downstream power benefits—how and why they are produced, how they are computed, and the factors affecting their magnitude. For this reason, it should be sufficient here to direct attention to the factors which have led to the decision, by British Columbia, that the power to be made available through these benefits should be sold for the present where it occurs, that is, in the United States.

The downstream power benefits diminish with the passage of time with respect to both their energy and capacity components. For this reason, to accept these power benefits into our system to supply British Columbia's electrical load would, in effect, be to accept a commitment to replace them gradually over the years to counter-balance this decline. In deferring by a temporary expedient the development of our own hydro power resources to serve our own immediate requirements, we would be undertaking to build power developments in the future to meet the diminishing supply of power benefits. The effect, then, of taking this benefit power into our system would be the same as if we were to undertake to supply a gradually increasing export of power to the United States over the next thirty years, at a price which had been decided upon in advance and which was quite unrelated to the construction costs which would be experienced over that period in the future. We could not build our economy on a sound basis by the acceptance of such a risk.

In addition, the downstream benefit entitlement from Arrow and Duncan, occurring within a period of two years, is too large in relation to British Columbia's immediate requirements to be accepted into the British Columbia system without loss of a part of the benefits for the first few years of operation. Part of the energy benefits could be used as a replacement for fuel at the Burrard thermal plant but its value for this purpose would be only about 2 mills. Capacity benefits could not, of course, be used in this manner, so that a very large part of the capacity benefits, and a substantial part of the energy benefits would be unusable in British Columbia for several years. This loss of revenue during the early years of operation would have an injurious effect on the economics of the whole development as interest charges would be accumulating without revenue to meet them. Under the downstream benefit sales agreement, however, this power which would have been wasted or used only for thermal replacement is to be sold at full price without any reference to its usability, which will become a matter of concern only to the United States purchasing agency.

British Columbia does not accept the commonly held belief that the downstream benefit power would be the cheapest power available to us for use in the province. Figures which have been used to support such a belief have

been based on the assumption that the cost of Mica dam should not be included as a part of the cost of the benefits after the commencement of at-site generation there. This type of economic analysis is a useful and proper tool for disclosing the added expenditure which could be undertaken for the purpose of obtaining and making use of the downstream benefit power, but since it includes benefits from the project at Mica creek, for which costs are not taken into account, it cannot be accepted as demonstrating the true cost of the downstream benefit power. It is emphasized most strongly that in our view there is no way of separating the cost of the downstream benefit power from the cost of power from the Columbia development as a whole, because the downstream power benefits are produced as an incidental benefit from a series of projects developed for the purpose of generating power from the Columbia river system in Canada. The only true measure of the cost of these downstream power benefits is the effect that their sale either in Canada or the United States would have on the cost of power from the Columbia system as a whole. The Canadian cost of transmitting the downstream benefit power to the points of use in Canada was estimated in 1960 at 113.8 million dollars in capital expenditure plus an annual payment of 2.0 million dollars initially under the treaty for stand-by transmission capacity. Because of this high cost which would be incurred in utilizing the downstream benefit power in Canada, it should be entirely obvious that the sale of the downstream benefit power in the United States would have a more beneficial effect on our system power costs than would their sale in Canada at the same price. At the time of expiry of the sales agreement, we will be entitled to have the power benefits returned to Canada, if we should wish to do so. By that time our transmission system should be developed and since the power benefits will be reduced in magnitude, it should then be possible to return these for our own use with very little, if any, additional expenditure for transmission.

The future magnitude of the downstream power benefits depends on many factors which we cannot forecast accurately at the present time for the life of the treaty. By the sale of these benefits for thirty years with payment in advance, we know what money we have available, and what projects it will build. The financial risk to British Columbia in this enterprise has been virtually eliminated, and any value that the benefits may have at the conclusion of thirty years will be clear benefit to the power system and the people it serves. In fact, the downstream power sales which will now act as a lever to bring into being the whole Columbia project in Canada, will then have an added value as very low cost power in Canada or further cash returns to this country.

Although we have presented several reasons which more than adequately justify the policy of the sale of downstream benefit power and the sales agreement which has been reached for that purpose, there is a final and urgent reason for this decision, a reason which is soundly based on the power development policy of British Columbia, as outlined earlier; namely, "to develop British Columbia's economic hydro power resources as rapidly as possible, by encouraging increased use of electrical energy in the province and by seeking markets elsewhere in Canada and in the United States." British Columbia is strongly in favour of the export of electrical energy, providing this can be done on terms which will have a beneficial effect on the cost of power in the British Columbia system. British Columbia also favours the sale elsewhere in Canada of power generated in British Columbia and distributed by means of a national transmission grid such as has been proposed. Such additional Canadian sales would be considered on terms which will produce a beneficial effect on the cost of power in the British Columbia system. The urgency which dictates this policy lies in the probability that the gradual improvement of

the economics of nuclear power generation will, in the next generation or two, leave us with undeveloped hydro resources whose present great potential value will be lost. It should be emphasized here that there is now no reason to believe that hydro power, when once developed, will ever be made obsolete by other means of generation; on the contrary, present nuclear technology suggests that the value of developed hydro will be enhanced in a mixed hydro-nuclear system, and that such a mixed system would then produce the lowest cost power which could be obtained in the future. However, the greatest loss which would be suffered as a result of the loss of our undeveloped hydro resources would not be in the field of power itself, but in the incidental benefits which arise from the control of our rivers. These benefits occur in the fields of flood control, erosion control, navigation, recreation and irrigation. Because of extremely variable flows, British Columbia streams have a great need for control of freshet flows by storage projects, but in most cases the value of the non-power benefits cannot justify the storage costs, which in our present national arrangement can only be paid for by power benefits. For example, flood control is urgently needed on the Fraser river, and the recent report of a joint federal-provincial board, "Final report of the Fraser river board on flood control and hydro-electric power in the Fraser river basin" indicates that this flood control could be paid for largely through the sale of electrical energy to be generated in connection with the flood control storage. The loss of the prospect of achieving control of this and other rivers in British Columbia at little or no cost to government revenues would be a serious loss indeed.

Informed technical opinion is in agreement that under the conditions of modern power technology there is no reason why electrical energy could not be exported on a recoverable basis without fear of any problems or conflicts in repatriation. It is the contention of British Columbia that the export of hydro-electric power on a recoverable basis is, in the light of modern power technology, a simple commercial transaction in which the national interest is involved only to the extent of ensuring the suitability of the terms relating to repatriation. In such an export transaction, no reduction in Canada's energy reserves is made; indeed, the nation's energy reserves may actually be increased due to the construction of hydro projects in advance of Canadian need. If a policy of export of power is capable of defence, then, surely the sale of downstream power benefits, which would originate in the United States and would be costly to return to Canada, needs no other defence.

Having discussed the factors which led to the decision to sell the downstream benefits in the United States rather than return them to Canada, it would seem appropriate to comment on criticism directed against the sale of the power which makes up these downstream benefits on the grounds that to export power is to export jobs. It is doubtful whether industry is as sensitive to the cost of power as it is claimed to be, although in British Columbia we hope this may be so, and we are endeavouring through our present power policy to attract industry by this means. Thanks to the treaty, and to the wealth of our other hydro power resources, we can expect to have available the lowest cost new power supplies available in the western free world during the next two decades at least. This criticism seems to result from a basic misconception regarding the effect of the downstream benefit power on power costs in the United States and in British Columbia. The Pacific northwest of the United States has had extremely cheap power for many years, due to the rich power resources of the Columbia river basin and to the subsidy effect of federal low-interest rates. The bulk price for firm power available to utilities from the federal marketing agency, Bonneville Power Administration, has been for many years $2\frac{1}{2}$ mills per kilowatt hour. The probable effect of the United States' share of the downstream power benefits will be to enable Bonneville to

maintain its price for a few more years, in the face of pressures which have increasingly threatened this price level. Since the sale price of the Canadian share of the downstream benefit power will be 3.75 mills (U.S.) on their calculation per kilowatt hour, which is well above the present Bonneville price, the sale of the Canadian entitlement will tend, if anything, to raise the average cost of power in the area. However, there is every reason to believe that the United States Pacific northwest will continue to have very low cost power for many years to come regardless of any arrangements that we may make with them on the Columbia. It is estimated that in 1973, the Canadian share of the downstream benefits will comprise only about 5 per cent of the power supply required for the Pacific northwest. This is too small a portion of the total power requirements to have a significant effect on the cost of power in that area.

The main load centre in British Columbia, on the other hand, has always relatively had expensive power. The present cost of generation in the British Columbia Hydro and Power Authority system is estimated to average just over 5 mills per kilowatt hour, and is expected to remain at about this level until it is reduced by the completion of the Portage Mountain project on the Peace river. A further reduction in average system costs will be produced by the low cost generation made possible at Mica consequent to the sale of downstream power benefits, by the power benefits which will result on the Kootenay river from the Duncan lake dam, from the anticipated construction of Libby under the treaty, and by subsequent projects on the Columbia in Canada made feasible by reason of the Mica storage.

All over the world the costs of hydro power is steadily rising. By moving at once on our two-river policy we have ensured that in British Columbia we shall not follow this world-wide trend of rising prices but rather shall be the beneficiaries of lower and lower costs.

The point to be made here is that if we are concerned, as we should be, about the difference in power costs between British Columbia and the Pacific northwest of the United States, and about the probable effect of this difference on competitive industries, we must recognize that we are powerless to affect the cost of power in the United States in any significant degree. Instead, we must concentrate our efforts on reducing the cost of power in the British Columbia system. The Columbia river treaty, as it is now proposed, is the most effective instrument available to us for this purpose, and the sale of the downstream power benefits in the United States is an indispensable part of this instrument.

It has been claimed that the sale of power benefits in the U.S. will have a detrimental effect on the aluminum industry in B.C. and Canada. Cost of power no longer has the great significance to the U.S. aluminum industry it once had, and in fact availability to markets and transportation costs are such over-riding factors today that expansions to this industry in the United States are now being made on the eastern seaboard and Mississippi valley with thermal energy providing the power.

Some critics of the Columbia river treaty are also critical of the decision by British Columbia to proceed first with the development of the Peace river. Such criticism is welcomed by British Columbia because it provides an opportunity for defending the Columbia river treaty arrangements in the context in which they should be defended, which is within the whole pattern of power development policy for British Columbia. The threefold objectives of British Columbia power development policy have been described earlier, and their application to the choice of the treaty sequence of projects over an alternative requiring the maximum diversion of the Kootenay river has been described. It now remains to describe the application of these same principles to the

decision to commence the development of the Peace river without waiting for the completion of arrangements for the development of the Columbia river.

In order to determine whether either of the two developments, the Peace or the Columbia, had a significant advantage over the other in terms of the cost of the resulting power, a direction was issued on December 28, 1960, to the British Columbia energy board, to carry out a study of the benefits and costs of the two projects. In order to provide expert and impartial professional advice, the Board immediately appointed as joint consultants two well-known engineering firms from the United Kingdom, Merz & McLellan, and Sir Alexander Gibb & Partners. The results of the investigations, made by these two eminent consulting firms, are contained in their report of July, 1961, which provided the basis for the report on the Columbia and Peace power projects by the British Columbia energy board, dated July 31, 1961. In comparing the development plans for the two rivers, the consultants found, in essence, that under similar costs of financing through public development, the cost of power delivered to the load centres from either project would be substantially the same. However, as always in such comparisons, the conclusions are only as valid as the assumptions used in reaching them, and the conclusions reached regarding power costs in this report, and in the subsequent findings of the British Columbia energy board, have been subject to some criticism because, in the case of the Columbia, credit was not given, in the economic study of the treaty developments, for the flood control benefit payments by the United States of 64.4 million dollars in United States funds.

The decision to omit the flood control benefits from consideration in comparing the two projects can be justified on two grounds. In the first place, it would be unreasonable, and indeed quite indefensible, to compare on the basis of cost of power alone, two projects which differed very greatly in the disruption which they would cause to established economic activities and in the number of people that they would displace. Obviously some form of credit would have to be given to the project which would cause the least dislocation to existing settlement. This was the same sort of problem as had been experienced in considering the alternative Columbia development involving the maximum diversion of the Kootenay river, but the decision was more easily made in that case as the more destructive project was also the less attractive one in terms of the cost of power. However, in comparing the Peace with the Columbia, the issue could not be so easily avoided, and, in the absence of any theoretical basis for reflecting this important difference between the projects, the decision was made to consider the flood control payment from the United States as a compensation for the flooding of the Arrow lakes area in Canada, and to eliminate this payment from the economic comparison between the two projects.

There is also, however, another reason for this treatment of the flood control payment, and the validity of this reason is much more apparent now than it was in 1961. British Columbia has always been seriously concerned about the flooding of the Arrow lakes area under the treaty. It was felt that there would be economic losses and costs for compensation, relocation and replacement of facilities beyond those considered in the earlier estimates, and this fear has been borne out by the increase in the present estimate of the cost of the Arrow lakes project, which has increased to approximately \$130 million from the original estimate of the international Columbia river engineering board of \$66 million—and as you know that was upgraded during the negotiations to a sum of \$72 million and subsequently by the Merz and McLellan-Sir Alexander Gibb estimate of \$91 million. This increase has resulted largely from increased estimates of flowage costs and from the necessity of providing a navigation lock in the dam in order to preserve the transportation facilities

of the area. These were the sort of problems that were contemplated, when the decision was made to consider the \$64 million flood control benefit as a form of special reserve; and, in view of the experience in this matter, it seems unlikely that many would now wish to challenge the propriety of that decision. The fact that the increase in estimated project cost of \$64 million is the same amount as the flood control benefit payment, in U.S. dollars is, of course, nothing more than an interesting coincidence.

Because planning with regard to acquisition of property within the reservoir area, replacement of facilities and the necessary reservoir clearing is now more advanced, it is considered that the flood control benefit payment should now be taken into account in an economic study of the cost of power from the Columbia development. Indeed, we made an amendment to the Canada-British Columbia agreement that all sums associated with Columbia were to be considered together. That was made in the requirement of the agreement and British Columbia agreed to its insertion at that time.

The comparison between the costs of power from the Columbia and Peace projects, as estimated in the Merz and McLellan-Sir Alexander Gibb report, would remain substantially unchanged, however, because of the corresponding increase in the estimated cost of the Arrow lakes project. The comparative merit of the Peace would be somewhat greater in any new comparison as a result of the improvement in the economics of that project which has been brought about by the 50-foot reduction in the height of the Portage Mountain dam. It can be accepted with complete confidence that the cost of the power which will be obtained from the Peace river will compare very favourably with the cost of power from the Columbia that would have resulted from the development of that river under a plan requiring the return of the downstream benefits to Canada. There is no justification whatsoever for the claim that by development of the Peace, British Columbia has been saddled with higher cost power.

Although the Peace and Columbia projects were found in 1961 to be substantially equal in terms of the cost of the power which would be produced, the Peace project did have some advantages to British Columbia which were not measurable in these terms. Foremost among these is the contribution which it is expected to make to the development of Central and northern British Columbia. Low-cost power has never been available in this region which, with its abundance of natural resources, appears to be on the threshold of rapid expansion. The development of this area is a primary objective in British Columbia's economic development policy and should, therefore, be a primary objective in British Columbia's power policy. Columbia development would make no contribution towards meeting the power requirements of the northern area, and the supply of power to this area was not provided for in any of the studies of the cost of power from the Columbia.

The value of the Peace river project in opening up a vast undeveloped area of northern British Columbia is demonstrated by recent developments and prospective developments in the Peace river area. The Rocky Mountain trench area of the Peace river basin had little apparent value before the commencement of the project, and it had no permanent inhabitants other than the occupants of two trading posts and a few trappers. In the whole reservoir area, not one permanent Indian residence will be flooded. The forest resource was considered of such poor quality that it had been the policy of the British Columbia forest service, until recently, not to fight forest fires in the area. Now, with the aid of a forest development road, constructed at the cost of the power project, the sales of timber in the area to be flooded are already approaching 100 million cubic feet, with about 70 million cubic feet more cruised and awaiting sale. To take advantage of the navigational access to be provided by the reservoir, which will be five times the area of Okanagan lake

and by far the largest lake in the province, an application is now under consideration for a pulp mill and saw-log complex, the ultimate size of which will rival the wood products development in the Alberni area on Vancouver island.

A further advantage of the Peace project over the Columbia results from the location of the respective project transmission lines. The transmission line from the Peace river runs almost directly south, and most of the undeveloped hydro power resources of British Columbia are located along the route of this transmission line or to the north of it. This line is therefore destined to become the backbone of an electrical transmission grid system supplying British Columbia. The transmission lines which will be required from the Upper Columbia power sites, on the other hand, appear unlikely to make much contribution to further transmission requirements in the province because, under independent development of the Columbia, they would extend to the load centres from and through areas which contain no other hydro power resources. The means by which the Peace river transmission system will contribute to future hydro development would be through excess transmission capacity which will become available as the power load in northern areas absorbs more and more of the Peace river generation, and by joint use of spare transmission capacity which must be provided for security of transmission for the first power project to be completed in the north for transmission to the lower mainland area. The magnitude of this spare transmission facility, as applied to the Peace river project in the Merz and McLellan-Sir Alexander Gibb report, and other studies, is illustrated by the transmission design requirement that the system be capable of carrying the firm peak load under emergency conditions with any one circuit out of service. Since two of the three transmission circuits to be provided must be capable of transmitting the full output, the spare transmission requirement for the Peace river amounts to nearly 50 per cent of the peak output. By application of the same standard of transmission security, subsequent transmission along the same route would be unlikely to require the provision of any spare transmission capacity.

The importance of this transmission facility through central British Columbia is demonstrated very forcibly in the "Final report of the Fraser river board on flood control and hydro electric power in the Fraser river basin", which was made public on March 10, 1964 by Mr. Laing and myself. This report described a system of projects on the Fraser river and tributaries which would provide flood control which is urgently required on that river system, at a cost which would largely be covered by the sale of the electrical energy that would be produced in connection with the projects. Transmission costs were assigned to these projects only for the transmission required from the power plants to the provincial transmission grid, and the output of these projects was evaluated on the basis of an assumed value of power delivered to the grid. Since the value of power was assumed to be 5 mills per kilowatt hour at the point of connection to the grid, it should be evident that the economics of the northern projects in this scheme, which is so important in terms of flood protection in British Columbia, would be severely affected if the construction of the transmission line required to market their power output had not been considered as being charged to the Peace river project. In addition, one of the most attractive projects covered by the report, both in terms of power and flood control, consists of the diversion of a tributary of the Fraser river, the McGregor river, into the Peace river reservoir, to provide an increase of about 15 per cent in the power output of the Peace river project. This attractive possibility rests, of course, on the use of the Portage Mountain reservoir for regulating the flow of the McGregor, on the Peace river generating plants for generating the power, and on the Peace river transmission line for carrying the power to the load centres.

The choice which confronted British Columbia in 1961 concerning an immediate source of hydro-electric energy was a difficult one. Preliminary engineering investigations had been completed for two major river development projects, and it had been found that within the accuracy of preliminary engineering estimates, power costs at the load centres would be substantially the same from either of the two projects. To meet the steadily increasing electrical load in British Columbia, it was necessary to commence construction on one of the projects immediately, unless the province was willing to forgo the prospect of low cost power and substitute smaller and less economical projects or thermal generation. One of the projects, the Peace river, had certain advantages, as already noted, from the point of view of overall provincial economic development and power planning. The other, the Columbia, had an overwhelming claim to consideration because of the treaty which had just been negotiated and because the Columbia, as a source of low-cost power, was a perishable resource, since downstream benefits from the United States were required to make the power economical, and the downstream power benefits were diminishing by nature through increase in the United States thermal capacity. All expert opinion was in agreement that the United States Pacific Northwest power system would, in the space of a few years, advance to a stage in which the benefits from Canadian storage would be so markedly reduced that the future negotiation of a treaty would become unlikely. However, although the Columbia development could not safely be deferred until after full development of the Peace, it was not yet ready, in 1961, to take its place in responsible planning to meet the British Columbia electrical loads which would have to be met by 1968, because satisfactory financial arrangements were still not assured and the treaty could not proceed to ratification without such arrangements. The position in negotiating the extremely satisfactory arrangements for the sale of downstream benefits and the protocol to the treaty, which have now been successfully achieved, would have been hopelessly prejudiced if the provision for British Columbia's short-term power requirements had been completely dependent on early ratification of the treaty. If an alternative project had not been undertaken, British Columbia's representatives might now have been appearing before this committee with a warning that immediate ratification of the treaty would be necessary to save the economy of British Columbia from the severe depression which would result from brown-outs and the inability to supply new industries with power. British Columbia felt in 1961 that the value of the arrangements which might be made under the treaty was so great that future consideration of them should not be subjected to the pressure which would have resulted from the inclusion of the Columbia, prior to ratification of the treaty, in the province's short-term power planning. We believe that events have amply demonstrated the wisdom of this policy.

The fact that a choice had to be made, and was made, in 1961 between the Columbia and Peace river projects does not mean that these projects are incompatible in 1964. In fact, under the schedule provided by the treaty and protocol, assuming ratification in October, 1964, the only respect in which these projects might have been incompatible would have been with regard to the provision for the immediate return of downstream power benefits to Canada; but, for the reasons already outlined, this concept was unattractive to British Columbia in any case. At Portage Mountain, completion of the earth dam is scheduled for 1967, and first power will be produced from the project late in 1968. The full output of the initial three generating units is expected to be utilized immediately to meet a load consisting, in addition to normal annual load growth, of loads which are now being built up by diesel generators in the north central area of the province, by the purchase of blocks of power under short term contracts, and by large thermal generating plants which will be

placed on stand-by while the output of the Peace river project is being absorbed. Following the commencement of operation of the initial units, the additional units necessary to develop the full output of the project will be installed and the reservoir filled. It is expected that the full output of the project will be absorbed into the British Columbia Hydro and Power Authority system some time between the years 1973 and 1976. For the Columbia, on the other hand, first at-site power generation will be at Mica Creek where, under the other hand, protocol, the storage dam will be completed in 1973. Although it would be technically feasible to complete the first generating installation at the same time as the completion of the storage dam, it appears likely that there will be advantages in staggering the completion dates for the two stages of the project. From this it appears that the best estimates of load growth and construction scheduling which can be made at this time indicate very strongly that there will be no reason for any delay in the installation of generating facilities at Mica Creek dam. On the contrary, if any major power consuming industry should be located in British Columbia during the next ten years, it may be expected that thermal generating facilities will be required to bridge the time-gap between the full utilization of Portage Mountain and the most economical scheduling of first Mica generation. With very large hydro projects such as Portage Mountain and Mica Creek, which require very long construction periods, it is necessary to schedule the commencement of construction of a project seven or eight years in advance to bring the project into production as required to meet the maximum estimated load growth projection. By this criterion, the schedule for the completion of Mica provided by the treaty protocol appears to come as close to meeting British Columbia's power requirements as can be estimated at the present time. There is no reason to believe that a better phasing for the two projects could have been devised. A decision that both projects should not go forward on their present schedule would require an extremely pessimistic view of the economic prospects of British Columbia for the next ten years. Such a view is not warranted by present circumstances in the province.

The opinion appears to persist in some quarters that Peace River power will be costly power, and that the construction of the project at this time will constitute a burden to the power users of British Columbia. Nothing could be farther from the truth. Because of changes in the design of the project and favourable costs obtained in contracts to date, there appears to be every reason to believe that the at-site cost of Portage Mountain power will be less than 2 mills per kilowatt hour. Apart from possible developments on the lower portion of the Fraser river, the only other potential projects in the Province which are known to be comparable in at-site cost to Portage Mountain are those to which benefits of the Columbia river treaty are applied.

It is easy to overstress the handicap imposed on the Peace river project by its distance from the lower mainland load centre. When the original proposal was received for the project, the proposed transmission voltage and the distance power was to be transmitted were unprecedented in the western world. By the time the transmission line will be required, however, many examples of 500,000 volt transmission lines will be in service in Canada and the United States, and, similarly, transmission distances will have advanced far beyond that of the proposed Peace river transmission lines. What was beyond the fringe of design experience five years ago will, by the time of completion of the first transmission circuit from Portage Mountain in 1968, have become almost commonplace. The 560-mile, 735,000-volt transmission line from the Manicouagan 5 dam in Quebec will by then be in service, and a 950-mile, interconnection between California and the Columbia river power plants seems now to be virtually assured. There is also reason to believe that more power will be used in the north central area of British Columbia than

was formerly estimated. Present indications are that when the first group of three generating units at Portage Mountain comes on line in 1968, more than 50 percent of their initial capacity will be required to meet loads in the North Central area of British Columbia, comprised of the Peace river, Prince George and Bulkley valley, Prince Rupert and Cariboo load areas. This prediction is based on the 1961 forecast of the British Columbia Energy Board for these areas, modified only by the addition of those major new loads which can be considered as practically assured. As the reservoir fills and new units are added to the plant, the percentage of the installed generating capacity at Portage Mountain which will be required for the north central load area will decline to a minimum of about 15 percent in 1974-75, assuming the completion of the power installation in that year. The percentage of the output of this plant that will be required in the north central area will increase steadily from this minimum, reaching about 25 percent of the total output by the year 1984-85. From these figures it can be seen that although most of the output of the Peace river project will be transmitted to the lower mainland load centre for many years, a very substantial block of power will be used to serve areas much closer at hand.

Far from imposing a burden on British Columbia power users, then, the Peace river project represents an extremely economical source of power for British Columbia, and may be expected to effect a substantial reduction in the average cost of generation in the British Columbia Hydro and Power Authority system. The at-site cost of generation is expected to be substantially the same as that which is anticipated for the full Columbia river development in Canada, even after downstream benefit payments have been taken into consideration. The only substantial power advantage possessed by the Columbia results from generally shorter transmission distances, although there is a real possibility that rapid development of the north central area of the province, due in part to the availability of low-cost power, will nullify this advantage. It should be stressed again, however, that there is no longer any point in making any comparisons between the Peace and Columbia river projects, since these projects no longer represent alternatives to each other. In fact, in British Columbia's view, it has been the undertaking of the Peace river project which has ensured the successful conclusion of the extremely attractive arrangements which have now been made for setting in motion the vast programme of the Columbia river development.

Another aspect of the Columbia river treaty which has excited concern in Canada is its provision with regard to the diversion of water to other watersheds from the Columbia River or its tributaries. This provision, contained in Article XIII (1) of the treaty, prohibits either country from making such diversions, except for consumptive use, without the consent of the other. This would prohibit diversions for purely hydro-electric purposes without further negotiation and agreement. Any doubt that this article permits diversions for consumptive use has been removed by an affirmation of this right in the protocol.

Objections to this provision of the treaty have been both general and specific in nature. The general objection has been that a limit is placed on Canada's sovereignty, thus relinquishing a position which had been attained with great difficulty through years of a relationship with the United States regulated by the Boundary Waters Treaty of 1909. This view appears to exist because of an excessive concern with suggested diversions in Canada which has blinded some Canadians to the fact that the United States is also accepting a similar limitation on its sovereignty. It does not seem to be generally recognized in Canada that the United States is also relinquishing the right to diversions for power purposes from the Pend-d'Oreille river and the

portion of the Kootenai river in the United States. The Pend-d'Oreille river could be diverted directly to the reservoir of the Grand Coulee dam, by tunnels about 16 miles in length from a point of diversion a short distance upstream from the point where the river enters Canada. The head on a power plant located near the shore of the Grand Coulee reservoir would be about 700 feet; the average flow of the river at the point of diversion is about 25,000 cubic feet per second, which is more than three times the amount which Canada could divert from the Kootenay river by the maximum diversion plan, which includes pumping from a reservoir created by a dam at Dorr, just upstream from the International Boundary. Because of the excellent storage regulation which has already been provided on the Pend-d'Oreille, it would be feasible to divert most of the average flow, and the gain in power which would result to the United States has been estimated to be about 820,000 kilowatt years per annum. Such a diversion would result in the loss of most of the power output at the existing Canadian plant at Waneta and the proposed Seven Mile site upstream which, because of excellent United States storage regulation, is estimated to be the most economical single potential power development on the Columbia system in Canada. The potential loss of power to Canada at these two sites through such a diversion is estimated to be about 700,000 kilowatt years per annum. The loss to Canada through this diversion would, therefore, exceed any gain which might be produced in Canada by the full diversion of the Kootenay river in Canada, even if that river were diverted to sea level within Canada via the Fraser river or the prairie region. The Pend-d'Oreille diversion appears to be both technically and economically feasible as was found in studies carried out by British Columbia engineers long before treaty negotiations commenced. The right of the United States to make this diversion was affirmed in the International Joint Commission order of July, 1952, authorizing the Waneta dam in Canada. The construction which has commenced in the United States, since the signing of the treaty, of a power plant downstream from the diversion point reduces the economic feasibility of this potential diversion, but by no means destroys it since the new boundary plant in the United States could still be operated for peaking at a later stage of power system development.

As a supplement to the Pend-d'Oreille diversion, it also appears technically feasible to divert to the Pend-d'Oreille part of the flow of the Kootenay river before it re-enters Canada. This diversion would require a dam less than 300 feet high, at a site for which feasibility has already been investigated, and would require tunnels somewhat longer than those for the Pend-d'Oreille diversion, but still well within the range of existing experience. Full diversion at this point would produce a gain to the United States in the order of 500,000 kilowatt years per annum. Even if full diversion of the Kootenay river in Canada should take place, diversion of the remaining flow in the Kootenay would still produce a United States gain of about 150,000 kilowatt years per annum. These gains would be at the expense of Canadian generation at existing and potential plants along the lower Kootenay and Columbia, where the loss without full diversion of the Kootenay in Canada could be more than 400,000 kilowatt years per annum. Full diversion of the Kootenay in Canada would reduce this loss to 120,000 kilowatt years per annum. It would seem at this point that both nations would have invested large sums to deny each other advantages on the Kootenay that come naturally under the present treaty arrangement.

British Columbia has always been concerned with the possibility of United States diversions from these rivers: such diversions appear to offer a higher degree of feasibility than most of those which have been proposed within Canada. Far from being imposed on Canada, article XIII (1) of the treaty

was included at the suggestion of British Columbia representatives, to protect Canada from damaging power diversions in the United States, while preserving British Columbia's right to make diversions for consumptive use.

It is quite possible that we may wish to make diversions of water for consumptive use and include incidental power generation. It is our opinion, based on expert legal advice, that such generation would be permissible, providing it takes place en route to the point of final use. As there would be substantial losses to British Columbia by any large diversions, these would require detailed negotiations between British Columbia and the prairie provinces and possibly agreement of the national government.

Specific objections to article XIII (1) have resulted from a concern about its effect on the possibility in the future of diversions from the Columbia and Kootenay rivers to the Canadian prairie region, particularly Saskatchewan. British Columbia believes such concern to be groundless for the following reasons:

1. Diversion without restriction is permitted for consumptive use, in which respect the Columbia River Treaty represents a distinct improvement over the Boundary Waters Treaty of 1909 as under the new treaty, no compensation for downstream losses resulting from such diversions is required.
2. There is no reliable indication of a probable need for such water in Saskatchewan. By using the same type of projection of population statistics, it could as easily be proven that all this water will be required for the same purpose in British Columbia in about the same time, owing to our much greater growth rate.
3. There is no indication of any power advantage in eastward diversions of the Columbia and Kootenay because of the high pumping lifts involved, which reach as high as 2500 feet in the scheme most favoured by some critics. There is no reason to expect that any net increase in the amount of energy available in Canada could be achieved by such diversions, because of efficiency losses in pumping and re-developing energy and losses of head between plants. While there is no indication of any net gain in power, there is every indication of a very large increase in the cost of power. Such power would be completely uncompetitive on the prairie region with present conventional thermal power based on local coal, let alone with nuclear energy which is likely to be competitive by the time such diversions would be required. It is no accident that most electrical generation in Alberta and Saskatchewan today is thermal, not hydro. In British Columbia's view, there is no merit in a scheme which would convert low-cost power in British Columbia, by means of pumping, to high-cost power on the prairies, with no net gain in the amount of power. It has been stated that power diversions would help pay for the cost of diversions for consumptive use: this could be true in the case where ultimate use of the water is made for consumptive use. However, diversion of water to Hudson bay for power purposes would almost certainly produce uneconomic power, which would be incapable of helping to finance any multiple purpose scheme with which it might be associated.
4. There is no reason to believe that the Columbia or Kootenay will ever be required for the prairie region, because vast quantities of water are available more economically from other sources. This was shown by a report entitled "A Preliminary Study of the Possibilities of Additional Water Supply for Saskatchewan Rivers",

prepared for the Saskatchewan Power Corporation in March, 1962, by Crippen Wright Engineering Ltd. The summary from this report reads, in part, as follows:

The following observations, without consideration of any planning by the province of Alberta, can be made:

- (a) Diversion of the upper north Saskatchewan river into the Red Deer and south Saskatchewan rivers suggests substantial savings in power development costs within Saskatchewan as it would take advantage of regulation provided by the south Saskatchewan dam reservoir and the additional 150 feet of fall available within the province. Diversion at Rocky Mountain House is very low in cost and appears to be an attractive first increment to supplement irrigation, domestic and power requirements.
- (b) The diversion of the Athabaska, as a first stage of an eventual Peace river diversion, is feasible and seems attractive during or following construction of power projects on the north Saskatchewan river.
- (c) Diversion of at least 20,000 cubic feet per second from the Peace river was found to be economical. Even greater quantities are available with upstream regulation.
- (d) Diversions of the Kootenay, Columbia, or Fraser river water are high in cost. Water from the Fraser costs the least of that obtainable from the western slope.

Remember that report was put out in March 1962.

It is suggested that the diversions be developed in the sequence listed above. Transfer of diverted flows from the north Saskatchewan river into the south Saskatchewan reservoir for controlled release down the Qu'Appelle valley appears economically feasible.

Attention should be drawn to item (c) of the summary, where it is noted with respect to the Peace river that "Even greater quantities are available with upstream regulation." This regulation is in the process of being provided by the construction of the Portage Mountain dam on the Peace river, and will be fully available with the filling of the reservoir in the early 1970's. It is estimated that this reservoir will at least double the regulated flow available for diversion to the south Saskatchewan dam reservoir, as reported by Crippen Wright, from 20,000 to 40,000 cubic feet per second. An additional flow of about 5,000 cubic feet per second could be made available from the diversion of the McGregor river to the reservoir as recommended by the Fraser river board, and feasibility has been indicated for other diversions to the Peace river reservoir. British Columbia accepts this report by Crippen Wright as indicating that the provision of storage on the Peace river by British Columbia has provided the solution to any major problem of water shortage which might develop in the future in the prairie region. Any additional diversions from the Columbia basin which might be justified for consumptive use in southern Alberta would be allowable under the treaty in any case.

British Columbia wishes to state emphatically that this province, as the owner of the water resource in question, is in complete agreement with the provisions of the treaty with regard to diversions to other river basins as being in the best interests of British Columbia and Canada. We are grateful that Canadian negotiators did not approach their task with such single-minded concentration on Canadian diversion possibilities that they could ignore, as some Canadians seem to have done, the even more attractive diversion possibilities open to the United States. We are confident that any sovereignty surrendered by Canada with regard to diversions has been more than equalled by a similar surrender by the United States.

The Canada-British Columbia agreement provides that the Canadian entity under the treaty shall be British Columbia Hydro and Power Authority. This agency applied for water licences, as required by British Columbia statute, covering the proposed treaty projects and, following extensive public hearings in 1961 at Revelstoke, Nakusp, Castlegar and Kaslo, licences were granted on 16th April, 1962. These licences, copies of which are attached, provide for planning and review by several departments of the provincial government of the aspects of the projects which involve their departmental responsibilities; and also provide that the projects will, in the future, be subject to continuing review by departmental government, with provision for reconciling the various interests which may, from time to time, be affected by the projects.

As the holder of the required provincial licences, the British Columbia Hydro and Power Authority will be responsible for acquiring the land required for the reservoirs, for compensating the owners, subject to the law of the province, and for restoring facilities affected by the projects and the amenities of the areas concerned.

It has been suggested that a Columbia basin authority, similar to the Tennessee Valley authority, should be set up to be responsible for all the various aspects of the development of the Columbia river basin. British Columbia rejects this proposal and suggests that the analogy with TVA is very poorly drawn, for several reasons.

One of the most compelling reasons for setting up the Tennessee Valley Authority was that jurisdiction over the area involved was distributed among seven states, which made it imperative to set up a single authority to which powers from the various jurisdictions could be delegated. The Columbia basin in Canada, on the other hand, is wholly within the jurisdiction of British Columbia. Unlike the states of the United States, the provinces of Canada have full jurisdiction over natural resources including possible uses of the water, and British Columbia is quite legally competent to carry out the development of the Canadian portion of the Columbia basin. Also, unlike the Tennessee valley development, which encompassed many purposes, some of which were of equal or greater importance than power, the present development of the Columbia is basically for power purpose, and all costs are assigned to this single purpose. The incidental benefits, such as flood control, navigation and recreation, which will result from the development, although valuable, are small in comparison to the power benefits.

Another difference between this development and the TVA development is that the latter took place in a comparatively thickly inhabited area, and was intended to relieve the depressed economy of the area. In the Columbia basin, on the other hand, the population is relatively small, and most of the basin will always be uninhabited because of its altitude, climate and topography. The only inhabited areas directly affected will be the Arrow lakes reservoir and, to a lesser extent, the Libby reservoir area.

Finally, British Columbia has a resource-based economy, and has developed effective departmental procedures and experienced resource administrators to administer these resources. British Columbia can see no good reason for removing this important part of the province from normal departmental administration. The granting of wide governmental powers to a nondepartmental crown agency appears to British Columbia to have no place in the concept of responsible government in the tradition of Canadian democracy.

Within British Columbia's internal jurisdiction, there reside many duties and responsibilities required in order to make any project viable. Such things as purchase of property affected, relocation of roads and services, rehabilitation of communities adversely affected, reservoir clearing, salvage of merchantable

timber and the restoring of amenities to reservoir areas are all facets of the development that must be dealt with in detail. In many of these matters there has for many years been a planned evolution to the objectives concerned. The work of timber harvesting is constantly going forward; reserves of crown lands have been created against further alienation within the project areas; and planning with respect to communities has been conducted to the point where, with the implementation of the treaty, discussions within the local areas can be undertaken without delay. All of these things are, as already stated, a responsibility of the province of British Columbia and its licensee, the British Columbia Hydro and Power Authority. There has been much experience in work of this kind in our province and you are assured that these matters will be looked after with interest, sympathy and all reasonable dispatch.

The arrangements of the projects entailed by the treaty, the treaty itself and the protocols and agreements thereto, have all been looked into most carefully and diligently by this government, assisted by technical officers and qualified consultants. In no case in the history of Canada has an engineering project received so much attention or public debate, and in no case has the criticism been so fully, firmly and satisfactorily answered by responsible governments.

British Columbia has searched every alternative, has deeply considered the treaty itself, and can find no suitable substitute that could be considered as a reasonable or economic alternative to the proposals now before you.

Mr. Chairman and members of the committee, on behalf of the government of British Columbia, I ask you to agree speedily in making a favourable recommendation on this treaty to the House of Commons.

Thank you.

The CHAIRMAN: Gentlemen, may I have the permission of the committee to print the attachments to the brief as appendices to the minutes. This, of course, would include what appears on page 7 being Columbia River Treaty project's general and physical characteristics which Mr. Williston did not read.

Mr. DAVIS: I so move.

Motion seconded by Mr. Haidasz and agreed to. (*See Appendix E*)

The CHAIRMAN: We now are open for questions.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Since copies of this brief were not provided to the members of the committee ahead of time, it would seem to me it would be better to have the questions postponed until we have had an opportunity to study the brief. There are a few brief disconnected questions which might be asked now, but I do not think there is much point in that.

The CHAIRMAN: Although I am in the hands of the committee, we normally rise at 6 o'clock.

Mr. PATTERSON: I am sorry, Mr. Chairman, but we could not hear what Mr. Cameron was saying.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, as we did not have the brief ahead of time I made the suggestion that we should wait until tomorrow to put questions in respect of it. As there are only 15 minutes remaining before 6 o'clock I do not see any point in starting to put questions at this time.

Mr. TURNER: Mr. Chairman, in deference to the suggestion made by Mr. Cameron perhaps the committee should adjourn until 10 o'clock tomorrow morning.

Some hon. MEMBERS: Agreed.

Mr. BYRNE: Mr. Chairman, is there any suggestion in respect of sitting this evening?

Mr. HERRIDGE: No.

The CHAIRMAN: I am open to suggestions made by members of this committee.

Mr. Turner, in deference to the suggestion made by Mr. Cameron, made a motion that this committee now rise until 10 o'clock tomorrow morning.

Mr. KINDT: Agreed.

Mr. TURNER: Can the witnesses be here all day tomorrow?

The CHAIRMAN: Yes.

Mr. WILLISTON: We will be here as required.

The CHAIRMAN: Is there anyone to second Mr. Turner's motion?

Mr. HERRIDGE: I second the motion.

Motion agreed to.

APPENDIX "E"

COPY

ARROW

ORDER
WATER ACT
Section 15

File No. 0236915

Being satisfied that no person's rights will be injuriously affected, I hereby amend clause (j) of Conditional Water Licence No. 27066, Arrow lakes and the Columbia river and its tributaries, to read:

- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1963, and shall be completed and the water beneficially used on or before the 31st day of December, 1968.

Dated at Victoria, B.C., this 14th day of December, 1962.

A. F. Paget
Comptroller of Water Rights.

COPY

ARROW

ORDER
WATER ACT
Section 15

File No. 0236915

Being satisfied that no person's rights will be injuriously affected, I hereby amend clause (j) of Conditional Water Licence No. 27066, Arrow lakes and the Columbia river and its tributaries, to read:

- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1964, and shall be completed and the water beneficially used on or before the 31st day of December, 1969.

Dated at Victoria, B.C., this 19th day of November, 1963.

A. F. Paget
Comptroller of Water Rights.

COPY

ARROW

Water Resources Service
Water Rights Branch
Department of Lands, Forests, and Water Resources,
Province of British Columbia

CONDITIONAL WATER LICENCE

British Columbia Hydro and Power Authority of Victoria, B.C., is hereby authorized to store water as follows:—

- (a) The sources of the water supply are the Arrow lakes and the Columbia river and its tributaries.

- (b) The storage works are to be located as shown on the attached plan.

COPY

ARROW

- (c) The reservoir is the Arrow lakes and such portions of the Columbia river and its tributaries and areas adjacent thereto as may be flooded by the works authorized under this licence.
- (d) The date from which this licence shall have precedence is 22nd June, 1961.
- (e) The purpose for which the water is to be used is storage.
- (f) The maximum quantity of water which may be stored is 7,000,000 acre feet per annum.
- (g) The period of the year during which the water may be stored is the whole year, subject to clause (q) hereof.
- (h) This licence is appurtenant to the undertaking of the licensee.
- (i) The works authorized to be constructed are a dam and auxiliary works, which will store water to a pool elevation not to exceed 1446 feet, providing that the pool elevation shall not be raised above 1444 feet, until authorized in writing by the comptroller.
- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1962 and shall be completed and the water beneficially used on or before the 31st day of December, 1967.
- (k) The licensee shall not commence construction of the works authorized under clause (i) hereof until the plans for same have been approved by the comptroller of water rights.
- (l) The licensee shall clear the reservoir in the manner and to the extent as directed by the comptroller after consultation with the deputy minister of forests.
- (m) The licensee shall provide public access to the reservoir area as may be directed by the comptroller.
- (n) The licensee shall make available an amount not to exceed \$5,000 (five thousand dollars) per annum to the department of recreation and conservation in each of the years 1962 and 1963 to conduct a study and make a report on such remedial measures as may be determined to be necessary for the protection of fisheries and wildlife.
- (o) The licensee shall undertake and complete such remedial measures for the protection of fisheries and wildlife as the comptroller may direct following receipt of the aforesaid report from the department of recreation and conservation.
- (p) The licensee shall construct and operate such components of a hydrometeorological network as may be directed by the comptroller and shall make the information obtained available to the comptroller as he directs.
- (q) The licensee shall operate the reservoir as may be determined by the comptroller in consultation with any boards or entities that may be established in respect to the interests and obligations of the governments of Canada and British Columbia.
- (r) The licensee shall provide such facilities over or through any structure for the handling of forest products and general water transport as may be directed by the comptroller.

COPY

ARROW

- (s) The licensee shall release water at such times and in such quantities as may be directed by the comptroller for the public benefit.
- (t) The licensee shall review with the comptroller of water rights prior to expropriation under the Water Act or any other act any matter where the licensee is unable to reach agreement with the owner or owners of land affected by the works and the operation thereof as authorized under the licence.
- (u) The licensee's rights issued under this licence shall be deemed to be subsequent to any rights granted under any licences which may be issued at any time for the consumptive use of water.

A. F. Paget,
Comptroller of Water Rights.

File No. 0236915

Date issued 16th April 1962

Licence No. 27066

COPY

DUNCAN

ORDER
WATER ACT
Section 15

File No. 0236916

Being satisfied that no person's rights will be injuriously affected, I hereby amend clause (j) of Conditional Water Licence No. 27067, Duncan lake and Duncan river, and tributaries, to read:

- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1963, and shall be completed and the water beneficially used on or before the 31st day of December, 1968.

Dated at Victoria, B.C., this 14th day of December, 1962.

A. F. Paget,
Comptroller of Water Rights.

COPY

DUNCAN

ORDER
WATER ACT
Section 15

File No. 0236916

Being satisfied that no person's rights will be injuriously affected, I hereby amend clause (j) of Conditional Water Licence No. 27067, Duncan lake and Duncan river and tributaries, to read:

- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1964, and shall be completed and the water beneficially used on or before the 31st day of December, 1969.

Dated at Victoria, B.C., this 19th day of November, 1963.

A. F. Paget,
Comptroller of Water Rights.

COPY

DUNCAN

Water Resources Service Water Rights Branch
Department of Lands, Forests, and Water Resources
Province of British Columbia

CONDITIONAL WATER LICENCE

British Columbia Hydro and Power Authority of Victoria, B.C., is hereby authorized to store water as follows:

- (a) The sources of the water supply are Duncan lake and Duncan river and tributaries.
- (b) The storage works are to be located as shown on the attached plan.
- (c) The reservoir is Duncan lake and such portions of the Duncan river and its tributaries as may be flooded by the works authorized under this licence.
- (d) The date from which this licence shall have precedence is 26th June, 1961.
- (e) The purpose for which the water is to be used is storage.
- (f) The maximum quantity of water which may be stored is 1,400,000 acre feet per annum.
- (g) The period of the year during which the water may be stored is the whole year, subject to clause (q) hereof.
- (h) This licence is appurtenant to the undertaking of the licensee.
- (i) The works authorized to be constructed are a dam and auxiliary works, which will store water to a pool elevation not to exceed 1892 feet.
- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1962 and shall be completed and the water beneficially used on or before the 31st day of December, 1967.
- (k) The licensee shall not commence construction of the works authorized under clause (i) hereof until the plans for same have been approved by the comptroller of water rights.
- (l) The licensee shall clear the reservoir in the manner and to the extent as directed by the comptroller after consultation with the deputy minister of forests.
- (m) The licensee shall provide public access to the reservoir area as may be directed by the comptroller.
- (n) The licensee shall make available an amount not to exceed \$5,000 (five thousand dollars) per annum to the department of recreation and conservation in each of the years 1962 and 1963 to conduct a study and make a report on such remedial measures as may be determined to be necessary for the protection of fisheries and wildlife.
- (o) The licensee shall undertake and complete such remedial measures for the protection of fisheries and wildlife as the comptroller may direct following receipt of the aforesaid report from the department of recreation and conservation.

COPY

DUNCAN

- (p) The licensee shall construct and operate such components of a hydrometeorological network as may be directed by the comptroller and shall make the information obtained available to the comptroller as he directs.
- (q) The licensee shall operate the reservoir as may be determined by the comptroller in consultation with any boards or entities that may be established in respect to the interests and obligations of the governments of Canada and British Columbia.
- (r) The licensee shall provide such facilities over any structure for the handling of forest products and general water transport as may be directed by the comptroller.
- (s) The licensee shall release water at such times and in such quantities as may be directed by the comptroller for the public benefit.
- (t) The licensee shall review with the comptroller of water rights prior to expropriation under the Water Act or any other act any matter where the licensee is unable to reach agreement with the owner or owners of lands affected by the works and the operation thereof as authorized under the licence.
- (u) The licensee's rights issued under this licence shall be deemed to be subsequent to any rights granted under any licence which may be issued at any time for the consumptive use of water.

A. F. PAGET,

Comptroller of Water Rights.

File No. 0236916

Date issued 16th April, 1962

Licence No. 27067

COPY

MICA

ORDER
WATER ACT
Section 15

File No. 0236927

Being satisfied that no person's rights will be injuriously affected, I hereby amend clause (j) of Conditional Water Licence No. 27068, Columbia river and its tributaries, to read:

- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1964, and shall be completed and the water beneficially used on or before the 31st day of December, 1974.

Dated at Victoria, B.C., this 19th day of November, 1963.

A. F. Paget,

Comptroller of Water Rights.

COPY

MICA

Water Resources Service
Water Rights Branch
Department of Lands, Forests, and Water Resources
Province of British Columbia

CONDITIONAL WATER LICENCE

British Columbia Hydro and Power Authority of Victoria, B.C., is hereby authorized to store water as follows:

- (a) The sources of the water supply are the Columbia river and its tributaries.
- (b) The storage works are to be located as shown on the attached plan.
- (c) The reservoir is the Columbia river and its tributaries and areas adjacent thereto as may be flooded by the works authorized under this licence.
- (d) The date from which this licence shall have precedence is 26th June, 1961.
- (e) The purpose for which the water is to be used is storage.
- (f) The maximum quantity of water which may be stored is 7,000,000 acre feet per annum.
- (g) The period of the year during which the water may be stored is the whole year, subject to clause (q) hereof.
- (h) This licence is appurtenant to the undertaking of the licensee.
- (i) The works authorized to be constructed are a dam and auxiliary works, which will store water to a pool elevation not to exceed 2,450 feet.
- (j) The construction of the said works shall be commenced on or before the 31st day of December, 1963 and shall be completed and the water beneficially used on or before the 31st day of December, 1973.
- (k) The licensee shall not commence construction of the works authorized under clause (i) hereof until the plans for same have been approved by the comptroller of water rights.
- (l) The licensee shall clear the reservoir in the manner and to the extent as directed by the comptroller after consultation with the deputy minister of forests.
- (m) The licensee shall provide public access to the reservoir area as may be directed by the comptroller.
- (n) The licensee shall make available an amount not to exceed \$5,000 (five thousand dollars) per annum to the department of recreation and conservation in each of the years 1962 and 1963 to conduct a study and make a report on such remedial measures as may be determined to be necessary for the protection of fisheries and wildlife.
- (o) The licensee shall undertake and complete such remedial measures for the protection of fisheries and wildlife as the comptroller may direct following receipt of the aforesaid report from the department of recreation and conservation.

COPY

MICA

- (p) The licensee shall construct and operate such components of a hydrometeorological network as may be directed by the comptroller and shall make the information obtained available to the comptroller as he directs.
- (q) The licensee shall operate the reservoir as may be determined by the comptroller in consultation with any boards or entities that may be established in respect to the interests and obligations of the governments of Canada and British Columbia.
- (r) The licensee shall release water at such times and in such quantities as may be directed by the comptroller for the public benefit.
- (s) The licensee shall review with the comptroller of water rights prior to expropriation under the Water Act or any other act any matter where the licensee is unable to reach agreement with the owner or owners of lands affected by the works and the operation thereof as authorized under the licence.
- (t) The licensee's rights issued under this licence shall be deemed to be subsequent to any rights granted under any licences which may be issued at any time for the consumptive use of water.

A. F. Paget,
Comptroller of Water Rights.

File No. 0236927

Date issued April 16, 1962

Licence No. 27068

HOUSE OF COMMONS
Second Session—Twenty-sixth Parliament
1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 6

TUESDAY, APRIL 14, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESSES:

The Hon. R. G. Williston, Minister of Lands, Forests and Water Resources;
The Hon. R. W. Bonner, Q.C., Attorney General; Mr. A. F. Paget,
Deputy Minister of Water Resources; Mr. Gordon Kidd, Deputy
Comptroller of Water Rights, Province of British Columbia.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--|---|----------------|
| Brewin, | Fleming (<i>Okanagan-Revelstoke</i>), | Macdonald, |
| Byrne, | Forest, | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Gelber, | Martineau, |
| Cameron (<i>Nanaimo-Cowichan-The Islands</i>), | Groos, | Nielsen, |
| Cashin, | Haidasz, | Patterson, |
| Casselman (Mrs.), | Herridge, | Pennell, |
| Chatterton, | Kindt, | Pugh, |
| Davis, | Klein, | Ryan, |
| Deachman, | Langlois, | Stewart, |
| Dinsdale, | Laprise, | Turner, |
| Fairweather, | Leboe, | Willoughby—35. |

(Quorum 10)

Dorothy F. Ballantine
Clerk of the Committee

MINUTES OF PROCEEDINGS

TUESDAY, April 14, 1964

(10)

The Standing Committee on External Affairs met at 10.00 a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin Byrne, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Dinsdale, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Herdridge, Klein, Laprise, Leboe, Macdonald, Matheson, Nesbitt, Patterson, Ryan, Stewart, Willoughby—(24).

In attendance: Representing the Province of British Columbia: The Hon. R. G. Williston, Minister of Lands, Forests and Water Resources; The Hon. R. W. Bonner, Q.C., Attorney General; Mr. A. F. Paget, Deputy Minister of Water Resources; Mr. Gordon Kidd, Deputy Comptroller of Water Rights; Mr. H. DeBeck, Water Resources Service.

Mr. Williston and Mr. Bonner were questioned, and were assisted by Mr. Paget and Mr. Kidd.

Mr. Williston tabled the report of the Crippen-Wright Engineering Company with the committee.

During the meeting, the Vice-Chairman, Mr. Nesbitt, took the Chair.

At 12.30 p.m. the Committee adjourned, to reconvene at 4.00 p.m. this day.

AFTERNOON SITTING

(11)

The Committee reconvened at 4.00 p.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman, and Messrs. Brewin, Byrne, Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Dinsdale, Fairweather, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Herdridge, Kindt, Laprise, Leboe, Macdonald, MacEwan, Matheson, Nesbitt, Patterson, Pugh, Ryan, Stewart, Willoughby—(26).

In attendance: The same as at the morning sitting.

The questioning of Mr. Williston and Mr. Bonner continued. They were assisted in answering the questions by Mr. Paget.

Mr. Paget filed with the Committee the transcript of the hearings held in 1961 at Revelstoke, Nakusp, Castlegar and Kaslo, pertaining to the granting of water licences, as required by British Columbia Statute, covering the proposed Treaty projects. (*Copies of these water licences from Appendix E, Issue No. 5 of Minutes of Proceedings, April 13, 1964.*)

The questioning continuing, the Committee adjourned at 6.05 p.m., to reconvene at 8.00 p.m. this date.

EVENING SITTING

(12)

The Committee reconvened at 8.00 p.m., the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Byrne, Cadieux (*Terrebonne*), Cameron, (*Nanaimo-Cowichan-The Islands*), Davis, Deachman, Dinsdale, Fleming (*Okanagan-Revelstoke*), Forest, Groos, Haidasz, Herridge, Leboe, MacDonald, Matheson, Patterson, Ryan, Stewart, Turner, Willoughby—(20).

In attendance: The same as at the morning and afternoon sittings.

On a question of privilege, Mr. Herridge referred to a newspaper report in the *Vancouver Province* of April 11th which attributed certain statements to him. He explained that at the time he was quoting an official of the British Columbia government. The Chairman thanked Mr. Herridge for his explanation.

The Chairman presented the fourth report of the sub-committee on agenda and procedure, dated April 14, 1964, which recommended as follows:

1. That Dr. Hugh Q. Golder, Toronto, and Dr. Arthur Casagrande, Professor of Geology, Harvard University, be invited to appear before the Committee on April 24th and April 28th respectively. (The Committee has been informed that expenses incurred by their attendance will be borne by the British Columbia Hydro and Power Authority).
2. That G. E. Crippen and Associates, Limited, Vancouver, be invited to attend before the Committee on April 24th, and reimbursed as ordered by the Committee for professional and/or expert witnesses on March 25, 1964.

On motion of Mr. Herridge, seconded by Mr. Byrne, the report was adopted.

The Committee resumed questioning Mr. Williston and Mr. Bonner, who were assisted by Mr. Kidd and Mr. Paget.

At 9.00 p.m. the Committee adjourned, on motion of Mr. Byrne, until 9.00 a.m., Wednesday, April 15, 1964, having agreed to hear Dr. H. L. Keenleyside, Chairman of the British Columbia Hydro and Power Authority at that time.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

TUESDAY, April 14, 1964

The CHAIRMAN: Gentlemen, I see a quorum and we are now ready to proceed by way of questions. Mr. Davis has indicated to me that he would like to ask some questions and I am open to questions from others.

Mr. DAVIS: First, Mr. Chairman, I would like to congratulate the British Columbia delegation, and Mr. Williston in particular, on their clear presentation yesterday; it has certainly helped the committee in its deliberations.

I do not intend to ask many questions or delay the proceedings unduly. There are, however, two matters on which I would like to obtain clarification, and I would like to draw the committee's attention more particularly now to the white paper that the Secretary of State for External Affairs tabled before this inquiry began.

The second paragraph of page 105, the Canada-British Columbia agreement, reads:

- (3) Canada shall do everything possible to expedite the issue of all licences and permits required under the laws of parliament by either British Columbia or the British Columbia Hydro and Power Authority in order for them to carry out and perform their obligations under this agreement—

I would like to ask Mr. Williston whether the British Columbia government is prepared to apply for licences, for example under the International River Improvements Act. I recall, and perhaps other members of this committee will recall, that approximately ten years ago the government of the province of British Columbia opposed the introduction of this act, and I would like to know whether the province of British Columbia is prepared to apply for licences in respect of the three treaty projects under that act.

Hon. R. G. WILLISTON (*Minister of Lands, Forests and Water Resources, Province of British Columbia*): Mr. Chairman, in answering questions I will field the questions myself along with my team. Those which have a legal significance or connotation will be handled by my colleague the attorney general, and some of the technical matters by other individuals. I will pass the first question to my colleague, the Hon. Robert Bonner.

Hon. R. W. BONNER, Q.C. (*Attorney General, Province of British Columbia*): Ten years ago I had the pleasure of appearing before this committee in opposition to a bill known then as Bill No. 3. British Columbia in particular entertained serious objections to provisions of the bill as it was then introduced, which would have had the effect of nationalizing structures on international rivers, not only in our province but elsewhere in the country. As a result of representations to the committee at that time, the bill as it was introduced to the House of Commons was significantly amended, and features which were objectionable to our province at least were deleted from the bill.

In the result, the bill provides for licensing provisions in respect of which British Columbia has no objection whatever.

Mr. DAVIS: It is now required that not only licences be obtained for the treaty projects but additional projects on the rivers? Is this your understanding?

Mr. BONNER: My understanding on that point is twofold, Mr. Davis. Firstly, I think the provisions of the laws of Canada and the province as to licensing are quite clear; and, secondly, our specific attention has been directed to this in the Canada-British Columbia agreement, and to this end we, of course, are fully committed.

Mr. DAVIS: There are other licences required. There are licences required under the Navigable Waters Protection Act. Does the province intend to make application for licences in respect of that act as well?

Mr. BONNER: The licences which are required are the subject of study, and I am sure the authority will be making all appropriate applications.

Mr. DEACHMAN: May I ask a supplementary question here? In connection with the Peace river, was permission under the Navigable Waters Protection Act requested or was that a subject for discussion? Was that a navigable water under the act?

Mr. WILLISTON: The reason, sir, no application has yet been made is that the navigability of the Peace river at that point has never been demonstrated, and it has never been in fact asserted to be a navigable river. The application of the act in that instance, if it is pronounced to be a navigable river or has been a navigable river, would be accepted by the province of British Columbia.

You should realize that in our province the fact of navigability of waters is rather a contentious matter for the federal government because once they assert navigability they also assert a degree of responsibility to assure that navigability, and they have been very reluctant to so do because of the costs entailed.

The Peace river in the area of the canyon—and this comes within the water rights branch—never has been navigated and it has never been asserted as navigable water.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I ask a supplementary on this same point?

Is Mr. Williston aware that on October 14 the then minister of justice, Mr. Lionel Chevrier, informed the House of Commons that the Department of Justice had advised him that the Peace river at that point did come under the terms of the Navigable Waters Protection Act; and that this statement was repeated last Friday by the present minister of public works, and again no later than yesterday afternoon in the House of Commons?

Mr. WILLISTON: All I can say, Mr. Cameron, is that such communication should be presented to the responsible authority in British Columbia. There never has been an assertion or statement concerning navigability of the Peace river to the responsible authorities in British Columbia.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You have not had that from the federal government?

Mr. WILLISTON: No.

Mr. DEACHMAN: May I conclude my question?

The situation in the Peace river in regard to the question of the Navigable Waters Protection Act, is not settled. The answer from Mr. Bonner this morning is that in the case of the Columbia river it will be taken under advisement. We therefore will still be looking into the question of the Navigable Waters Protection Act in connection with two major rivers in British Columbia rather than toward the settling of these two acts?

Mr. WILLISTON: You are asking us a question directly. The British Columbia government has taken the stand that the British Columbia Hydro and Power Authority—its entity—has to apply for and obtain all necessary licences on the river, and I think that action will be taken. In any event, an

application has already been made with regard to the Arrow lakes where we are about to start, which indicates purpose and intention on the part of the authority.

However, I think if you would question Dr. Keenleyside more particularly on that matter when he is a witness you would obtain a more direct answer.

The CHAIRMAN: Mr. Davis had a line of questions.

Mr. DAVIS: I would like to go on from the question of licensing projects by the federal government to the matter of financing the Columbia river treaty projects.

I would like Mr. Williston to describe more particularly what the situation was early in 1961 when the treaty was signed by Canada. There is in *Hansard* of February 2, 1961, a reproduction of a letter from the premier of the province of British Columbia, Mr. Bennett, addressed to the Hon. Donald Fleming, dated January 13, 1961, four days prior to the treaty being signed. The statement reads as follows:

Like the federal government, British Columbia is anxious that the Columbia development proceed at the earliest possible moment—assuming, of course, that it is proved feasible from engineering and financial standpoints.

There are also several references in the submission made yesterday in respect of doubt as to financing. On page 32 of the brief we read:

The choice which confronted British Columbia in 1961 concerning an immediate source of hydro-electric energy was a difficult one.

This was the choice between the Columbia and other sources.

Then again on page 34 at the top we see:

The fact that a choice had to be made, and was made, in 1961 between the Columbia and Peace river projects does not mean that these projects are incompatible—

And so on. What was the situation? Were the treaty projects capable of being financed at the signing? Was there sufficient evidence that the projects could be financed in an economic manner?

Mr. WILLISTON: At the date of the signing of the treaty there had, first of all, been no Canada-British Columbia agreement signed. That is point one. On the basis of that agreement there would be set forth the manner in which British Columbia might handle the terms it was to secure from the downstream benefit power, the method in which it was to convert that power into cash and make it apply to and assist with the financing of the projects.

There was no clarification and at that time no indication given to the province of British Columbia whether in fact there was going to be an allowance for the sale of downstream benefits at attractive terms. Thus British Columbia was not in a position to indicate at that point the complete financial feasibility of the project. That is point number one.

Point number two is the fact that at that stage there had been no licensing of the project on the river; there had been no definitive engineering of the project on the river. And to obligate ourselves absolutely at that stage before these other requirements had in effect been made we felt would be a negation of our duty as a province. In other words, to indicate, before we had gone before the people in public hearings to ask for a licence, that the project was in fact proceeding, was in effect completely feasible, without even getting an expression from the people who were going to be affected, did not appear at that time to be in our best interest. That is the reason we took the stand and the position which we adopted at that time.

Mr. DAVIS: In other words, at the time Canada signed the treaty, financial feasibility had not been determined. Are you confident now that the projects under the treaty are financially feasible?

Mr. WILLISTON: Absolutely. As a matter of fact we think at the present time it is the most attractive series of projects available anywhere on the North American continent. At that time we thought they could be made attractive, but we had no assurance at that time either in writing or in any other form that these could in fact be consummated in a profitable manner. We did have an agreement between Mr. Fulton and the negotiators, the prime negotiator and a supplementary negotiator on behalf of British Columbia, that was my deputy minister of lands, Mr. Bassett, and Mr. Bonner's deputy minister, Dr. Kennedy. They were both assured by Mr. Fulton that arrangements for the sale of downstream benefits would be negotiated prior to final ratification, and assurance was given that notes confirming this would be passed immediately that financial requirements had been determined. That was an early commitment given to those two gentlemen, which was generally substantiated later on in further correspondence from Mr. Fulton.

Mr. DAVIS: At the time, in 1961, the engineering investigations were at a preliminary stage. I think you said something to this effect. Is this one of the reasons, or the primary reason, why the cost estimates have risen? I refer you, for instance, to the white paper and other sources which show that the estimates of cost of the three projects in 1961 approximated \$345 million while currently they are estimated at \$410 million. The Arrow lakes project has gone up the most. Would you like to say something about this? Is it inflation, or is it as a result of larger or different structures being envisaged? Is it a result of more drilling and problems such as subsurface problems, and so on?

Mr. WILLISTON: First of all, and not to dodge the question, let me say I expect that this committee will want the most definitive answers which it can receive. So I would ask that you again place this question before Dr. Keenleyside who is responsible for the actual engineering and who will have engineers here to verify these cost statements. Let me say though, on my own responsibility, that one of the costs which has been inflated or which has increased has been the Arrow lakes projects because in the concept now it is completely different from what it was at the time the international engineering board submitted its report. It is entirely different from the project envisaged when the negotiations were under way and when estimates moved up from \$66 million to the \$72 million mark.

It is felt that the only satisfactory way to handle the problems that occur above Castlegar is to place a lock in the dam for the movement of log products; and when agreement was received from the Celgar company that the government of British Columbia or the British Columbia Hydro and Power Authority had no responsibility whatsoever for the movement of their logs if a lock were installed, then the long-term view taken was that the most logical method was to include a lock. The complete movement of these logs into the lock and out of the lock, this was to be the sole responsibility of the companies operating with logs within the area.

As you know, alternative to that was to hoist the logs over the dam by means of a movable crane. If that had happened, there would have been a period of time in which jurisdiction over the logs passed from the company to the hydro authority and back again to the company; and anyone who knows anything about the logging business knows what difficulties occur at that in between point. We felt that we would be chasing logs forever on the river. So the lock not only fulfils the use in so far as the logging industry is concerned, but it also insures the navigability of the river, and meets the problems of navigability which would naturally be raised in fulfilling the requirements that occur under the navigation act.

Mr. CHATTERTON: Would the building materials used be subject to the 11 per cent federal sales tax?

Mr. WILLISTON: We are still—

Mr. CHATTERTON: Has the provincial government formally requested that it be exempted?

Mr. WILLISTON: The provincial government through myself and Mr. Bonner have requested in negotiations that, when the project was in fact started, or prior thereto, it should not be made subject to the 11 per cent sales tax.

Mr. CHATTERTON: Have you any idea roughly as to what the additional cost will be by virtue of this?

Mr. WILLISTON: Again, if you would be good enough to ask Mr. Keenleyside this specific item, what they have to pay, because it is his responsibility and not one generally of the government, I think he could tell you precisely to the cent almost how much.

Mr. HERRIDGE: I have a *Canadian Press* dispatch of June 21, 1963, which I shall now read and then ask a question. The dispatch reads as follows:

Three reasons were given by Mr. Williston for the higher Arrow estimates, which do not affect the actual dam construction, he said.

1. Decisions to build a \$12,000,000 lock to allow passage of logs and shipping.

2. The full cost of clearing the reservoir to be created by the dam was not included in the 1956 estimates.

3. Property values in the affected acres have tripled.

Is this press report correct?

Mr. WILLISTON: No. Actually the property values in there, as we have them, have not tripled. That has been taken out of its context. The cost of the logging installations and so on which had gone up over the original 1956 estimates which were in the International Engineering Board report—the installations the values—of which generally have to be compensated for as industrial installations along the Arrow lakes, the estimates of these had approximately moved up better than twice during that period. It did not make reference to the actual land values, which had been asserted to mean that the government had so stated, but never has.

Mr. HERRIDGE: You never previously corrected the statement?

Mr. WILLISTON: Yes; I did correct it in the house at the time. The question has been asked of me in the house as well.

Mr. DAVIS: I think the members of this committee are quite concerned about the effect of inflation when they see these figures rising over a relatively short period of time. They are concerned about the cost of these projects when completed being higher than the latest estimates we have obtained. Would you care to express a judgment in respect of whether sufficient allowance has been made for possible increases in wage rates, and cost of materials, and whether, in fact, these projects now can be built within the cost estimates made available to the committee.

Mr. WILLISTON: The critical aspect of these things—the effect upon the people—is in respect of the Arrow lakes project. We are fully confident at this time that ample allowance has been made for all costs which may occur in flowage and construction of the Arrow lakes project. The other projects have not escalated to the same extent. Most of the cost here is the impact of the project on the existing establishments within the region. We recognize, as does everyone else, that the most critical aspect of this occurs around the Arrow lakes. I think our estimates are well within any costs which might occur.

Mr. CHATTERTON: Under which British Columbia statute will the properties be expropriated?

Mr. WILLISTON: That question comes within the responsibility of the authority which is charged with the actual project. I think in deference to the committee it should be answered by Dr. Keenleyside. However, I would say he has more than one act under which he may operate. He may operate under the Power Act, or within the Waters Act on the expropriation power. In the final analysis he is charged with the project and has to accept the responsibility for the method by which he undertakes this duty.

Mr. CHATTERTON: At all times there will be an appeal to the courts by the person whose land is expropriated?

Mr. WILLISTON: At all times there will be appeals through the procedures.

Mr. HERRIDGE: May I ask a supplementary question. You would prefer us to direct our questions in detail in respect of compensation to Dr. Keenleyside?

Mr. WILLISTON: Dr. Keenleyside, for the entity accepting responsibility for the project, also has to accept responsibility for the expropriation and relocation. May I say that the power authority has the complete co-operation of the government. In so far as policy is concerned, in dealing with the authority, they are instructed to be fully sympathetic to the needs of the people. Over and above this, if you will look at article (t) under the appendix headed "Water Resources Service, Water Rights Branch, Conditional Water Licence," you will notice:

The licensee—

which is the Hydro and Power Authority—

—shall review with the Comptroller of Water Rights prior to expropriation under the Water Act or any other Act any matter where the licensee is unable to reach agreement with the owner or owners of lands affected by the works and the operation thereof as authorized under the licence.

In other words, we are setting up a situation whereby the whole matter can be reviewed following the initial discussions, and if those discussions are unable to be resolved between the authority and the individual, the whole matter is reviewed through the comptroller's office, and of course that brings it under the government because it is under my jurisdiction. If a mutually satisfactory agreement still is not able to be reached, it proceeds to arbitration under the expropriation procedures.

Mr. HERRIDGE: As you know, I represent a good number of people who are very concerned, and I represent a very high percentage of veterans, men who have fought for this land. The Arrow lakes branch of the Canadian Legion, which represents all the veterans in the Arrow lakes region, has written me a letter urging that I ask the Department of Veterans Affairs to appoint a legal counsel to represent all veterans—whether or not they are on V.L.A. holdings—in dealing with the British Columbia hydro authority. Now, Mr. Williston, would you have any objection to the Department of Veterans Affairs appointing legal counsel to represent all the veterans who may be affected by the flooding under the treaty?

Mr. WILLISTON: None whatsoever.

The CHAIRMAN: Gentlemen, we are still with Mr. Davis, but I thought our suggestion of last evening was to the effect that we would be following Mr. Williston's brief in the chronological order in which it appears. I do not wish to intervene or interrupt. After Mr. Davis, I have Mr. Cameron, Mr. Gelber and Mr. Herridge, all of whom have indicated they wish to ask questions. We are having so many supplementaries now that we are not making very much progress.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I apologize to Mr. Davis.

Mr. HERRIDGE: You are quite right, Mr. Chairman.

Mr. DAVIS: I have one further question in respect of costs. Is it your understanding that this figure, for example \$130 million as the estimated capital cost now for the Arrow lakes project, will be sufficient to look after the wages which will be paid over the next half dozen years to build this project, the increasing cost of materials, the higher cost of expropriation, and so on? Is this a figure which will look after eventualities between now and the completion of the project?

Mr. WILLISTON: I have been given assurance that it is.

Mr. DAVIS: In other words, these figures are not simply cost estimates as of today in the sense of building it now; these are cost estimates projected over the period of the construction.

Mr. WILLISTON: I have nothing further to say.

Mr. HERRIDGE: I have another supplementary question on that. In view of the experience with the British Columbia Hydro and Power Authority which over a considerable period of years has exceeded its estimates by an average of 50 per cent; can you guarantee that these estimates are reasonably close?

Mr. WILLISTON: I can guarantee nothing except I guarantee that in latter years the statement you made concerning the hydro estimates is incorrect.

Mr. HERRIDGE: We can give the figures.

Mr. WILLISTON: I said that over the latter years the statement is wrong. I am a director of hydro now, and during the period in which I have been associated and responsible that has not happened yet on one occasion. I am dealing with the present, not the past.

Mr. HERRIDGE: We learn from history, you know.

Mr. DAVIS: As I understand it under the treaty, the Arrow lakes and Duncan lake projects must be completed within five years, and Mica creek within nine years. Do you expect these projects can be completed within that period of time?

Mr. WILLISTON: The engineering advice we have received tells us we can meet these deadlines easily.

Mr. DAVIS: Would this apply even more in respect of the Mica project?

Mr. WILLISTON: Yes. Remember that when we first negotiated the date lines on the original treaty, no definitive engineering had taken place, and the best advice they could get at the end was that three years would be required on Mica creek. We wrote that requirement into the original treaty. The time still has been left the same, but we have completed the engineering and are in an excellent position to meet the scheduled time.

Mr. DAVIS: In other words, you may be able to pick up some bonus in respect of the completion of construction ahead of time.

Mr. WILLISTON: That is why that was negotiated in the protocol and in discussions with the American authorities.

Mr. DAVIS: Would it be possible to complete the Mica creek project, assuming there was a market for this power in 1970 or 1971; that is, ahead of the 1973 date which is mentioned now?

Mr. WILLISTON: I would rather you put that question to the engineers responsible because the final engineering plans in respect of Mica are not before us. Dr. Keenleyside would have a witness to speak to that question.

Mr. DEACHMAN: Mr. Chairman, I have just a short question. On what dates, Mr. Williston, would you hope to let contracts in respect of Duncan, Arrow and Mica?

Mr. WILLISTON: This question is also the responsibility of the British Columbia Hydro and Power Authority. However, I can say, from a government policy standpoint, we hope to be able to let contracts in respect of aspects of Arrow and Duncan—and, “hope” is the way I have put it—within the month of October, 1964, provided that all the work is consummated by this committee and that ratification takes place. I would ask that you direct the question in respect of Mica to Dr. Keenleyside, even from the standpoint of the word “hope”.

Mr. DAVIS: The financial benefits which we shall receive show the estimated capacity at Mica creek at 1.8 million kilowatts and an estimated cost of at-site power produced, if the treaty is completed in time, at between 1 and 1½ mills per kilowatt hour. Would you agree with that?

Mr. WILLISTON: These are estimates supplied to us by our engineers, and I accept them as engineering estimates. But, if you wish details concerning them I would refer you to the engineers. I am sure Dr. Keenleyside would have a witness to answer that question.

Mr. DAVIS: Do these estimates originate with the federal or British Columbia government, or with the British Columbia entity?

Mr. WILLISTON: These estimates now are the complete responsibility of the British Columbia entity who have been charged with carrying out the definitive engineering, and they have to accept responsibility for the estimates which are forthcoming.

Mr. DAVIS: In other words, your delegation is telling us that some time in the early 1970's very large amounts of power of the order of 1.8 million kilowatts will be available at the Mica creek site at an at site cost of between 1 and 1½ mills per kilowatt hour.

Mr. WILLISTON: Well, you have asked two questions. In respect of the one there is the assumption of machining and, in that regard, from the standpoint of policy the government of British Columbia always has taken the stand that Mica creek would be completed and would be machined and phased into the operation. I should refer back again to article XVI in the white paper, where we have signed to the effect that British Columbia agrees that generators will be installed in the dam at Mica creek as soon as it is economically feasible. My paper yesterday indicated that we were sure at this stage we would be proceeding directly to the installation of generation by the completion date in 1973.

Mr. DAVIS: Well, let me put it another way; assume markets are available—and this is a qualification you have made—and there is a very large amount of power potential generated as a result of this treaty in the early 1970's at Mica creek, very low cost power, in the amount of 1.8 million kilowatts and in the order of 1 to 1½ mills per kilowatt hour—

Mr. WILLISTON: That is right. There is no argument on that.

Mr. DAVIS: —would you say that this probably is the largest single gain to Canada and British Columbia as a result of this treaty, and which is a direct and immediate result of it.

Mr. WILLISTON: We believe the whole treaty and the whole concept envisaged in the treaty is one of the best economic deals that Canada has obtained at any time.

Mr. DAVIS: So the on site resource at Mica creek is of major importance to Canada.

Mr. WILLISTON: Yes.

Mr. DAVIS: Would you say the function of the Arrow lakes as it later modifies the flow of on site production at Mica creek is largely one of regulation.

Mr. WILLISTON: We are convinced in British Columbia, and even convinced from a policy standpoint, that the key to the economic feasibility and control of the Columbia river is the High Arrow project, and the advice we have received from our engineers has convinced us of that from the first. This is the reason we have been so adamant in insisting that this project be a part of the over-all scheme.

Mr. DAVIS: You would not be as free to operate Mica creek as you wished if you did not have the High Arrow.

Mr. WILLISTON: It is impossible to put a regulation behind Mica creek. One of the main functions of High Arrow is to re-regulate the water from Mica creek. We are not worried so much about Mica creek, but this is the complete key of the generation of power at Downie and Revelstoke, and if there was any hindrance to the operation of the water flow to meet American requirements behind Mica it would damage our own generation position at Mica, Downie and Revelstoke. The complete feasibility of the whole thing is ensured by the High Arrow project.

Mr. DAVIS: In respect of the order of magnitude of the downstream benefits reference was made in your brief yesterday to the fact the Canadian share of the downstream benefits in the late 1960's would amount to 5 per cent of all the power sold in the United States Pacific northwest. This percentage figure will decline with the passage of time for two reasons, namely the growing power supply in the northwest and the decline in physical terms of the downstream benefits themselves.

Mr. WILLISTON: Yes, and the statement concerning the financial value of downstream benefits has been covered in the white paper and, very adequately, by Mr. MacNabb.

Mr. DAVIS: At the end of the 30 year period, in respect of the downstream benefits sale, would the 5 per cent figure drop to, say, 1 per cent or less, which is just a complete guess on my part?

Would you care to answer that question?

Mr. WILLISTON: I will have Mr. Kidd answer that question, if I may.

Mr. GORDON KIDD (*Deputy Comptroller of Water Rights*): At the end of the 30 year period the benefits of the downstream sale eventually would decline to a smaller amount than in the initial stages. However, we cannot say how much that decline would be; it would depend on the economic conditions of load growth, as well as other factors which we cannot take into account at the present time, and which only can be estimated. However, we do know, regardless of what happens, there will be residual benefits left after the 30 year period and these have been estimated to have a value of between \$5 million and \$10 million a year, so British Columbia can look forward to collecting these additional benefits after the 30 year period of sale.

Mr. DAVIS: Would you agree that if the amount of the downstream benefits remained unchanged in the context of a growing power consumption in the United States Pacific northwest, say doubling every decade, that at the end of the 30 year period the downstream benefits would amount to about 1 per cent of the total sale in the Pacific northwest.

Mr. KIDD: Yes, that would be correct. The capacity would have declined to zero.

Mr. DAVIS: The point is that these downstream benefits are relatively unimportant and their importance is declining in the over-all United States Pacific northwest picture as time passes, and the repatriation of these, regardless of their size, will not be a difficult matter in 30 years time.

Mr. KIDD: That is correct. There will be a strong interconnection between the United States and British Columbia. As a matter of fact there is a 500,000 KV line planned at Blaine, and there would be no difficulty in bringing back these residual benefits to British Columbia if we wished to do so at that time.

Mr. DAVIS: I have one further question to ask Mr. Williston having to do with generation. There are several references made in your brief to generation particularly at pages 38, 40 and 42. For example at the bottom of page 37 you refer to article XIII (1) of the treaty and state:

This provision, contained in Article XIII (1) of the treaty, prohibits either country from making such diversions, except for consumptive use, without the consent of the other. This would prohibit diversions for purely hydroelectric purposes without further negotiation and agreement.

You stress the words "purely hydroelectric purposes". Is your interpretation to the effect that diversions can be made for example in Canada as long as the primary purpose is consumptive; whereas power production might be purely incidental?

Mr. WILLISTON: That is our understanding.

Mr. DAVIS: Thank you.

Mr. BREWIN: Mr. Chairman, I should like to ask a question along the lines of the last question asked by Mr. Davis. Mr. Williston, how did you come to that understanding? Is it embodied in any legal opinion? Who has given you to understand that to be the interpretation?

Mr. BONNER: The philosophical background of the article in question dealing with diversions is essentially concerned with volumes of waters and run of the river plants, which are really what we are talking about in terms of incidental electric generation and which do not interfere with volumes of water. Consequently, diversions for consumptive purposes, for the purposes envisaged in the treaty, can at the same time be accompanied by run of the river generation which does not interfere with the philosophical considerations of volume to which the article in question is directed. Accordingly it is our view that this type of generation is entirely compatible with the article in question.

Mr. BREWIN: Mr. Bonner, I have listened to what you have said about the philosophical view with interest, but have you legal opinions to support this interpretation? This is a complicated matter to be dealt with by courts, lawyers, and experts of various sorts. I am wondering whether you can help us out by giving us any such expert opinion. I am not trying to downgrade your own opinion but have you anything more than that?

Mr. BONNER: I think I will stand on my own opinion at the moment if you are not going to downgrade it.

Mr. BREWIN: I should like to see that opinion supported, if you have any support, Mr. Bonner.

The CHAIRMAN: Mr. Cameron, are you ready to ask your questions?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes. Mr. Williston, I am sure you will appreciate the fact that it is extremely difficult for those who have been on the outside to follow all the terms and developments of negotiations that have taken place leading up to this treaty. I am wondering whether you can clear up some points which I have in mind. Did British Columbia have representatives on the negotiating committee from the start of negotiations?

Mr. WILLISTON: British Columbia has had representations on committees from the very beginning. It even had representatives on the international joint engineering board appointed under the International Joint Commission. We have had representatives continuously on these committees.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): When did the negotiations start?

Mr. WILLISTON: 1944 would be the date of the International Joint Commission reference, and we had engineers associated at that time. One of the engineers who has had the longest association is with me at the table here this morning.

I personally joined the negotiations along with the then minister of northern affairs and national resources, the Hon. Jean Lesage, initially in the discussions which took place in 1956 and the actual meetings with the United States representatives which commenced in 1957. I have continuously represented British Columbia from that date forth, or a representative of myself.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Was there at any time during these negotiations a consideration of the alternative plan known as sequence IXa?

Mr. WILLISTON: All plans, as I indicated in my presentation yesterday, for the development of the Columbia river were given very serious consideration not only by the engineers associated and attached to the various governmental departments but by consultants outside of departmental control.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): That was not quite what I wanted to know, Mr. Williston.

Mr. WILLISTON: The answer to your question is yes, it was given very thorough consideration.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): What I really wanted to know was: Was sequence IXa presented at any time by the Canadian delegation including the British Columbia representatives as a basis for a Columbia river treaty?

Mr. WILLISTON: You must understand the nature of the negotiations, Mr. Cameron, before you can properly phrase that question because, as was pointed out in my notes yesterday, the I.J.C. report which was presented in 1958 gave three methods by which the river could be developed, but because of limitations attached thereto it indicated that not one of them could be accepted as presented and placed into operation, and that such matters as sequence of construction, the effects of the international border and so on would have to be taken into consideration.

May I say briefly as a policy stand that the British Columbia government took the position that we would store in British Columbia as much water as we could economically be paid for in the United States, and once we determined the amount of water which the United States was willing to pay us for, then we got to the stage of placing that water in reservoirs to the maximum advantage to the province of British Columbia. In placing that water in reservoirs every means and method of handling that water was examined in detail.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Williston, according to your statement you sat in on the actual negotiations that lead to this treaty, apart from the very preliminary ones which took place years ago. Can you tell us if at any point during the negotiations with United States representatives the government of Canada proposed a Columbia river treaty based on what is known as sequence IXa?

Mr. WILLISTON: The answer is no.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): At no time did the Canadian government present sequence IXa as a basis for a treaty on the Columbia?

Mr. WILLISTON: Sequence IXa was discussed with the negotiating team including the High Arrow but at no time did we present a scheme of development that did not include the High Arrow scheme.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): At no time did the Canadian government, and you are speaking of the Canadian delegation when you say "we", present sequence IXa as a basis for a treaty on the Columbia?

Mr. WILLISTON: There were no representations in which we were not joined.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): At no time was any plan proposed that excluded the High Arrow proposition?

Mr. WILLISTON: There was no plan formally put forth in so far as negotiations were concerned that did not include the High Arrow proposition. Among ourselves, certainly there was discussion about the matter but when it came to the actual presentation of the plan the answer to your question is no.

Mr. FLEMING (*Okanagan-Revelstoke*): I have a question which I should like to ask as I think it is very important. Discussions took place between the representatives of the government of Canada and the representatives of the government of British Columbia, but by the time they came to mutual agreement to approach the United States the plan had been discarded. Is that correct?

Mr. WILLISTON: No.

Mr. FLEMING (*Okanagan-Revelstoke*): The plan had been discussed between the representatives of the government of Canada and the representatives of the government of British Columbia but in their approach to the United States as a consequence of those discussions the plan had been removed from consideration.

Mr. WILLISTON: Yes, that plan as you mentioned it, had been removed from discussion.

Mr. DAVIS: In other words, the McNaughton plan, in common terminology, was not officially advanced for negotiation with the United States?

Mr. WILLISTON: That is right.

Mr. HERRIDGE: Could you define your use of the two words: "officially" and "formally"? Are you speaking of a formal document?

Mr. WILLISTON: Whether it was a formal document or whether it was not from the standpoint of economics and common sense—

Mr. HERRIDGE: I am not concerned with economics and common sense. What I want to know is what went on at these negotiations.

Mr. WILLISTON: I can just say it was not presented.

Mr. HERRIDGE: I have a supplementary question, Mr. Chairman. Have you any knowledge of the fact that negotiations were broken off and Mr. Fulton had to report back to the cabinet because of your refusal to consider sequence IXa?

Mr. WILLISTON: It is not a fact.

Mr. HERRIDGE: You have no knowledge of that?

Mr. WILLISTON: No.

Mr. GELBER: Mr. Williston, I presume you are familiar with the correspondence between the Secretary of State for External Affairs and General McNaughton, which was distributed to the committee. Have you seen copies of that?

Mr. WILLISTON: If it is recent correspondence to which you are referring, I have not seen it.

Mr. BYRNE: I do not wish to interrupt Mr. Gelber but I had a supplementary question dealing with the McNaughton plan.

The CHAIRMAN: I am sorry; maybe you would like to ask your supplementary question now.

Mr. BYRNE: My question deals entirely with the very matter that has been raised with respect to sequence IX, or the so-called McNaughton plan. Could Mr. Williston tell me if it is a fact that the so-called McNaughton plan was a requirement in the Canadian negotiators' thinking with respect to the diversion to the Fraser river—that is the complete diversion of the entire Columbia river system into the Fraser river—which was, as everyone recalls, the main negotiating anchor that General McNaughton used to convince the United States authorities of the need for a return of downstream benefits?

Mr. WILLISTON: With respect, I cannot answer for the thinking that was in the minds of the Canadian government, Mr. Byrne, so I would rather let some other responsible person answer that question.

However, to give some clarification, and everyone here is groping, let me say first of all that we never discussed the McNaughton plan as such during the negotiations. At the start we did not know how much water could profitably be sold and we accepted certain storage basins as a start. We first of all accepted the storage basins of High Arrow, Duncan and Mica creek. In our initial investigations, before we had a firm answer from the United States representatives and before our engineers were able to come up with statistics, maybe a year went by during which we argued between the 15 million acre feet and 25 million acre feet which could be sold and used effectively by the United States authorities. We accepted the High Arrow and the Duncan, we accepted the Mica creek, and we accepted the necessity of placing additional storage in the headwaters of the Columbia-Kootenay system, if it was required. That was the position of the province of British Columbia and we proceeded on that basis. Gradually, as the field narrowed and we eventually found that only 15.5 million acre feet of water could be effectively used and paid for by the United States authorities and which was profitable to British Columbia, we then assigned that water storage to the projects which had already been determined as part of the system. Once we had assigned 15.5 million acre feet of water, there was no economic or feasible place to put any more storage into the system. However, at the time when we were discussing 15.5 million acre feet as opposed to 25 million acre feet quite frankly there was an additional 10 million acre feet which flowed between storages up and down the Kootenay and the Columbia river system. These were the last added storages and when they in fact became uneconomic they were excluded altogether. I believe there has been quite a bit of confusion in your mind concerning those discussions and how the change came about.

Mr. BYRNE: My question, perhaps more simply put, is as follows: Would it not have been absolutely necessary to have diverted the Kootenay into the Columbia in order to make a complete diversion into the Fraser river of any economic value whatsoever? It seems to me this is the reason why the McNaughton plan has become fixed in the public mind as the most important plan for Canada while in reality when the Fraser river diversion became no longer feasible it was then that we changed to the present sequence.

Mr. WILLISTON: British Columbia never at any time accepted the feasibility of the diversion of the water from the Columbia to the Fraser river, therefore any statement I might make would have no meaning whatsoever. We never at any time accepted the feasibility of that diversion.

Mr. GELBER: Mr. Williston, I am going to read you a few statements from letters by General McNaughton, and I would like to have your comments. You

covered some of the items, but not all of them, in your presentation yesterday, and possibly you answered some questions on this today. I hope I am not doing violence to General McNaughton's correspondence but I would like to hear your comments. The Secretary of State for External Affairs told the committee that the resource being owned by British Columbia the choice of sites was ultimately the decision, if not in the first instance at a later date, of the province of British Columbia. General McNaughton, on August 22, 1963 wrote to the Secretary of State for External Affairs:

I recall that the engineering consultants appointed by the British Columbia government appear to have been given terms of reference strictly confined to the treaty projects only. At any rate, their published reports do not embrace the alternatives, and in particular the very great advantages to Canada which I consider we would secure from sequence IXa are not reflected in their presentations.

What were the terms of reference that were restricted?

Mr. WILLISTON: Again I would direct any references of that nature to Dr. Keenleyside for a specific answer. As a general policy statement, I would say that when we came to definitive engineering, finally, it was within the terms of the treaty projects as they were set forth. At that time we had no alternative, I think, but to examine those in detail.

Prior to that, the reference which was made to Crippen-Wright, which I mentioned in my presentation, was very, very broad indeed. The Crippen-Wright representation and examination took into full account the recommendations which had been placed in the international engineering board report, including sequence IXa. They used all that material in their general examination to make a recommendation to the British Columbia government. Therefore, I do not accept the fact that we restricted them in any way in the examination of that material for the greatest good in so far as we were concerned.

Mr. BREWIN: May I ask a supplementary question, Mr. Chairman?

The CHAIRMAN: Mr. Brewin.

Mr. BREWIN: In connection with that, will the published reports of Crippen-Wright be made available to us in order that we may see whether General McNaughton or this witness is correct? Are Crippen-Wright's reports to be filed or made available to us?

The CHAIRMAN: I am not in a position to say what will be filed by Crippen-Wright. I think a supplementary question would have to be addressed to the witnesses.

Mr. BREWIN: Perhaps I should address my question to Mr. Williston.

Mr. Williston, can you furnish us with published reports which you say took into full account sequence IXa, upon which its rejection was recommended?

Mr. WILLISTON: It took into account all possible developments of the Columbia river that were before us, and we are willing to table a copy of that report. There is one available and we are willing to table it with the committee. I have already tabled it in British Columbia a year ago and copies were made available to the federal government. We are willing to table copies with this committee also.

Mr. GELBER: General McNaughton says:

I do not agree that the government of British Columbia is the government responsible for final selection, by which I understand you mean the ultimate decision. The Columbia and the Kootenay are rivers which flow out of Canada, and, under the British North America Act, Canada, by the International River Improvements Act, has asserted jurisdiction.

Do you want to comment upon that? That passage is contained in the letter of September 23, 1963.

Mr. WILLISTON: We take a definite stand in British Columbia that the hydro power located on rivers within the province is a provincial resource and comes within the provincial responsibility. We acknowledge the fact that there are certain provisions which must be made in so far as an international river is concerned. However, we take the stand that we meet those provisos; that the fact that those provisos are present does not in fact give the power to the persons who demand certain restrictions or certain requirements of us; that go so far as to present a plan for the development of the river which is a provincial resource.

I will let my colleague speak legally on this.

Mr. BONNER: I do not want to say it legally; I would prefer to say it more simply. The assertion of the jurisdiction of the international rivers bill does not go to the proprietary interest; and this is the basic point.

Mr. GELBER: I have one more point with regard to principles.

General McNaughton, in his letter of September 23, 1963, talks about the Dorr plan with its manifest advantages to Canada, and cost saving, power production, and flexibility of regulation for Mica and the other great Canadian plants, and what now turns out as a result of experience to be the paramount necessity of maintaining Canadian jurisdiction and control over waters of Canadian origin.

Mr. WILLISTON: We just do not agree with the statement.

The CHAIRMAN: Mr. Herridge, you have a supplementary question?

Mr. HERRIDGE: Mr. Chairman, following the question of the commencement of negotiations and the federal government's position, I have the text of the speech here which was given to me by Mr. Fulton. This speech was made in Prince George on Tuesday, November 28, 1961, and I quote in part:

Another Bennett dodge concerned the Libby dam—he has gone up and down this province trying to sell the proposition that this was an Ottawa give-away—the fact is that Libby was inevitable once the Bennett government vetoed dams on the Columbia river—I refer to Bull river, Dorr—the Luxor division, which together with Mica, the federal negotiators of the treaty would have preferred.

Mr. Williston, does that indicate that the negotiations started with the federal government preferring sequence IXa?

Mr. WILLISTON: No, that happens to refer to a matter in which certain individuals took a stand which was completely contrary to all the evidence presented before them by the economists, by the engineers and by everyone else who had anything to do with the project. It was thoroughly discussed on the basis of the reports of the economists and the engineers, and those individuals have been here.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Who are the individuals?

Mr. WILLISTON: Those individuals are here, and certainly Mr. MacNabb can bring you back to specific detail. Mr. Parkinson has also been here, I understand. The matter has been considered in great detail. The British Columbia government and its representatives have always accepted advice tendered to them by the experts available for consultation.

Mr. BREWIN: May I ask a supplementary question?

The CHAIRMAN: Mr. Brewin.

Mr. BREWIN: Who are the individuals? The minister referred to individuals who rejected all this vast accumulation.

Mr. WILLISTON: The consensus of the negotiating team as a whole was to reject the views of these individuals.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Who were the individuals who rejected the stand taken by Mr. Fulton? Who were they?

Mr. BYRNE: Obviously Mr. Fulton was one.

Mr. WILLISTON: It is Mr. Fulton's statement. I suggest you question him.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You made the statement now, Mr. Williston, that this was the result of certain individuals flying in the face of economic and engineering reports. Can you refer to anyone but the official negotiators of the government of Canada?

Mr. WILLISTON: No, because they were represented by Mr. Fulton. I would ask you to ask Mr. Fulton.

Mr. BYRNE: Was General McNaughton one of the individuals?

The CHAIRMAN: The next person on my list is Mr. Herridge. I would like to give Mr. Herridge a chance to ask questions, but Mr. Gelber has a series of questions to put to the witnesses. If each member of the committee is so broken up—

Mr. BYRNE: Are they broken up?

The CHAIRMAN: —in his series of questions by the supplementaries, the effect will be that we will have no co-ordination.

Mr. WILLISTON: I will answer two questions here. The two people in the committee who expressed that view were Mr. Fulton and Mr. Greene.

Mr. HERRIDGE: They represented the federal government?

Mr. WILLISTON: Yes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Then the federal government was advancing IXa?

Mr. WILLISTON: Neither of those gentlemen was in the position of chairman of the committee presenting the co-ordinated view of the federal government at any time.

The CHAIRMAN: Gentlemen, I would not like any member to be precluded from asking questions, but I do not think we should spend time on questions that will lead to repetitive answers by the witnesses. I would ask the co-operation of all members to ensure that the committee is not loaded with too many supplementary questions.

Mr. BREWIN: Mr. Chairman, you are looking at me. I do not know whether this lecture is directed at me. However, I was trying to obtain an answer to the question from this witness.

Mr. BYRNE: The Chairman is a little cross-eyed; he was actually looking at me!

The CHAIRMAN: It is a weakness of mine to look at the best looking members of the committee!

Mr. Gelber?

Mr. GELBER: In conformity with the request of Mr. Williston, I will reserve my other questions on General McNaughton's correspondence for Dr. Keenleyside.

The CHAIRMAN: Mr. Herridge?

Mr. HERRIDGE: First of all, I do want to credit the minister with what I would term a very smooth presentation yesterday. I remember during the hearings on the Kaiser dam in 1955 the minister's colleague, who is sitting beside him, made a very excellent presentation at that time and was complimented from all sides; it was a presentation in support of the Kaiser dam. I remember

at the time Mr. Paget gave evidence as being opposed to flooding High Arrow dam, and things of that sort. That was very convincing to some people.

Would the minister say in view of the experience the government has gained since that time, that the government's representatives were wrong on that occasion in promoting the Kaiser dam?

Mr. WILLISTON: No, I would not say they were wrong. I would say that in any given set of circumstances in which you make a decision, you take the circumstances which are before you at the time and make a decision accordingly; and that the circumstances which were before the committee, the group, and the government of the day, were such that I support the decision and I think they made the right decision at the time.

Mr. HERRIDGE: They said it was the best way to develop the Columbia river at that time.

Mr. WILLISTON: And that is right, at that time.

Mr. HERRIDGE: What has caused you to change your opinion?

Mr. WILLISTON: Ten years and a profoundly different attitude on the part of the United States as a whole in their willingness to commence negotiations on the jointly beneficial projects for the river. Remember, at the time the Kaiser agreement was given forth there was absolutely no co-ordination and co-operation with the American people at all; they took the distinct stand that they would never pay for the upstream storage, and because they would not of course, it was on that basis—and this is generally an assumption—I would assume that General McNaughton secured approval of the federal government at the time to carry out an engineering study to divert water from the Columbia to the Fraser river, since the American government showed no indication whatsoever of co-operating on storage costs.

Mr. HERRIDGE: What would you say in the light of history and experience you have had? Would you say it was fortunate that Canada and the federal government vetoed the Kaiser dam?

Mr. WILLISTON: My colleague was in harness at that time. I became minister only in 1956. He might care to offer a few remarks himself.

Mr. BONNER: I would say it was extremely fortunate that the federal government plan that is represented by Bill No. 3 did not in fact become law in Canada, and that we made the recommendations which were originally indicated, because if this bill had not been altered, British Columbia would not be in a position to profit under the treaty that we have today.

Mr. HERRIDGE: Is it possible that the federal government of that day vetoed the Kaiser dam and refused to support it?

Mr. BONNER: I think that the federal government was motivated by the report and considerations in the bill which was brought before the house at that time, and I am glad that my view has prevailed.

Mr. HERRIDGE: On February 5, 1964, Mr. Jack Davis wrote an interesting letter to a good friend of mine in which he said:

This is a new figure as far as I am concerned. High figures have purposely been "leaked out" by the Canadian and British Columbia governments with a view to influencing our negotiations with the United States.

I was interested in this, not because we were concerned about the United States, but whether there was a certain leak of negotiations behind the stage, as it were. Since that time you have denied that there was any. Would you please tell us who was telling the truth?

Mr. WILLISTON: I would assume that since Mr. Davis is a member of the committee, the committee might in camera very well resolve such problems. I

would say that, from the circumstances indicated, the presentations at all times, in so far as my engineers were concerned, the representatives on behalf of British Columbia, that our presentations in this matter were absolute. And I would go further and say that with respect to Hon. Paul Martin, who has been with us at the time—I can say this in absolute sincerity and as strongly as I can—his presentation and the integrity of his presentation were absolute, not only in the presentation itself but in every assumption and word that we have had from that individual since we have sat down in negotiation at any level. We have never had to back up. I would just as soon say that out here in public, because it has been absolute.

Mr. HERRIDGE: You do not deny then that Mr. Davis is telling the truth?

Mr. WILLISTON: Any such question is irrelevant and has nothing whatever to do with providing for development for either Canada or British Columbia.

Mr. DAVIS: Is Mr. Herridge drawing from this that the United States was in some way inveigled?

Mr. HERRIDGE: No.

Mr. DAVIS: Inveigled into paying more for the downstream benefits than it should have?

Mr. HERRIDGE: No.

Mr. DAVIS: That is the logical conclusion to your last question.

Mr. HERRIDGE: I was just concerned with the last question about the government leaking false figures to the press.

Mr. MACDONALD: Why then does Mr. Herridge ask these questions if he is drawing nothing from them?

Mr. HERRIDGE: I regard Mr. Davis as an honourable gentleman.

The CHAIRMAN: We must not quarrel within the family!

Mr. DINSDALE: On page 3 of Mr. Williston's brief he makes the statement that "the happy result was the signing of the Columbia treaty on January 17, 1961." To me that statement would suggest, notwithstanding the difference of opinion which may have existed during the various stages of the negotiations, that at the time of the signing of the treaty the government of British Columbia was coming into complete agreement with that treaty. Is that conclusion a correct one?

Mr. WILLISTON: That conclusion is correct; and as you know, along with Mr. Hamilton, latterly in your capacity as joint chairman, we both agreed to it at that time, yourself and myself.

Mr. DINSDALE: Yes. Now in reference to my service on the committee, as joint chairman with Mr. Hamilton, I think the only part I played in the negotiations was in the concluding committee meeting when this agreement was reached. Would you then say, Mr. Chairman, or would the witness then say, that the main purpose of the protocol was to clarify and to underscore some of the points made in this original treaty particularly with reference to the handling of the rent control machinery, and also with respect to the disposition of the downstream benefits, and specifically to points of that kind?

Mr. WILLISTON: I would say that the basic treaty and documents drawn up were the result of the efforts of the engineers and other specialists who were intimately associated with that work for a matter of some five or six years. I was one of them. We became loaded with basic background material and we read into certain documents meanings which would not readily be accepted by others. The fact is that there was a degree of ambiguity in certain of the articles that were within the treaty. These were brought to attention; and a fresh look was taken by people who in fact had deep association with the formulation of the various clauses in the treaty. I think it has been

to the ultimate benefit of Canada and British Columbia certainly that a clarification did take place and that certain things were spelled out in greater detail to prevent argument on these matters in the future.

I will return to your opening statement and say that the foundation for the treaty was well and truly laid. The treaty and the whole procedure has been improved by this very detailed look which has been taken at it, and the protocol which has been added to it. The protocol would have had no great value had not the foundation work done in the first instance been basically good. I think everybody insists that that is so.

Mr. DINSDALE: Mr. Chairman, Mr. Williston being so forthright in that statement, I presume he would agree that before the government of Canada signed the treaty with the United States, this viewpoint was confirmed in writing. I believe in response to Mr. Davis' question, Mr. Williston indicated there was some correspondence with Mr. Fulton which indicated the government of British Columbia basically was in agreement.

Mr. WILLISTON: I am prepared to file with the committee, if it so desires, every bit of correspondence which has taken place over the years between all responsible persons in British Columbia and the federal government, both in wires, letters, and anything else which may be pertinent to this question. However, I would say this: The actual signing of the treaty—let us set this in background. Remember that British Columbia insisted a treaty document be agreed to in essence, and that it then be set on the table while we proceeded with the necessary engineering and licensing of the project, because we insisted you cannot license a project on a provincial resource through an international agreement. At the same instant we knew you could not license a resource unless there was basic agreement in respect of what this treaty would encompass. So, it was always our understanding that the treaty document would be brought to a stage and placed on the table, and that once our licensing and engineering had been completed and we were in a position to move, action would be taken.

As you know, the political circumstance in the United States was such that it became desirable to sign the treaty by the then republican administration before the officers associated with the negotiation left office. In that regard the first letter I received was a letter from Mr. Fulton close to the date of January 12 indicating that the federal government, with our concurrence, would like to take advantage of this situation so that it would not be necessary to renegotiate the whole treaty document with the democratic administration. We agreed to that, and at the same time expressed a reservation which had to be taken care of prior to any ratification by the Canadian government. I think that is the statement. That reservation was stated in letters by myself and in letters by Premier Bennett at that time, and both were filed with the federal government prior to the actual signing of the treaty document on January 17, 1961.

Mr. DINSDALE: From Mr. Williston's remarks, Mr. Chairman, I conclude that he regarded the continuing good relations with the United States government as of prime importance. Based on that fact, would he agree that the major breakthrough made by the government of Canada in negotiating with the United States was getting the agreement of the United States government to make available or return 50 per cent of the downstream benefit.

Mr. WILLISTON: I can only say that was the result of the negotiation. I do not think you can exclude any part of an agreement. You either have to take the agreement as a whole and say it is basically good or is not good. Certainly, the availability to us or payment for half the power made available established the economic feasibility of the projects in so far as we were concerned. That has always been a matter of conflict which I will not deny, but remember that from the beginning—through representations of my colleague which the record will confirm—British Columbia demanded there be allowance for the sale of

downstream power benefit in the United States. That clause was made a part of the treaty document at our insistence from the very beginning. I will go further and say that under the circumstance that we had carried out no negotiation, we did not realize at the beginning the basis upon which this sale would be made, but we demanded there be authority that such a negotiation could be carried out.

It was only in the light of subsequent events, in transferring the downstream benefit to an actual value which assisted us with the project, that we literally adopted the strong position which has been our position from that day forth.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I ask a supplementary question? Mr. Williston, to what do you attribute the United States agreement of recognition of the principle of downstream benefit?

Mr. WILLISTON: I think I am in no position to give a reason for what anybody else for which I am not responsible. I would have to ask somebody who is responsible to give the reason they made the decision they happened to make. I cannot give it.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You would not say that possibly General McNaughton's expenditure of funds in the International Joint Commission to establish the feasibility of a diversion to the Fraser river had something to do with that sudden change of policy?

Mr. WILLISTON: I do not think so. Now you have passed the fact and are up in the realm of pure supposition. The United States authorities knew as well as we did—they were up there—that the whole question of the diversion of the Columbia river to the Fraser, or into the Thompson—the most valuable fishery chain in British Columbia—was completely unrealistic even in the beginning, and until somebody resolved this over-all problem of fish and power it was a red herring. You did not ask for it, but my own view is that when the Peace river became a reality, the United States authorities knew we were not completely dependent upon the Columbia river, and that is the time they decided to talk business in so far as Columbia river development was concerned.

Mr. HERRIDGE: That was afterwards.

The CHAIRMAN: Mr. Dinsdale has the floor.

Mr. DINSDALE: Referring to the matter of definite information concerning the fiscal feasibility of the project at the time the treaty was signed, Mr. Williston has made the statement that the making available of the downstream benefit assured the government of British Columbia that this would be an economically feasible power project. I would like to ask Mr. Williston whether it is true that while there was no specific information concerning the financial aspect of the project, nonetheless there had been sufficient information available from various consultants to assure the government of British Columbia that this was an entirely economically feasible scheme. Inasmuch as British Columbia is a high cost power area, I think perhaps your criterion might have been that power would be made available at lower than a 5 mill rate. Have you any comments in that respect?

Mr. WILLISTON: May I first make a comment because I made what amounts, in your interpretation now, to a misstatement.

I should have said that the return of downstream benefits or the availability of that power to us established a basis of feasibility for the economic construction of the plants on the Columbia river. Apparently I should not have stated that position as such because at that time we had not, in fact, engineered any of the projects; we did not have any definitive engineering at all, as was required. But, from the estimates and from the basis from which we were

working it appeared at that stage we had a project which was feasible. It had still to be proved out, and that was the position which we were taking in the province.

Mr. DINSDALE: I would conclude you were assured power would be made available at a cost lower than 5 mills.

Mr. WILLISTON: At that stage of the game before the engineering was complete and before we had any actual knowledge of the final quantities of anything we were still in the estimate stage. British Columbia took a very, very strong stand that no figures on cost should be presented or should be used at that stage of the game until they could be backed by some competent engineering advice. And, in justice, we were highly alarmed, if I may say so, that in certain quarters very close figures as to cost were presented when no licence had been given and no engineering of a definitive nature had taken place. No final agreement had been reached and yet people were coming out and using figures purportedly correct to a hundredth of a mill for power costs. We took a very strong stand in British Columbia against such figures being used.

Mr. DINSDALE: Now if I might pursue the questioning one stage further, following the signing of the treaty the two outstanding problems were the disposition of the downstream benefits and the price of the sale of the downstream benefits, and this is in the latter stages of the negotiations. I would take it that once the federal government had made the decision to reverse the long standing policy on prohibition of power export this resolved the main difficulty in coming to the final decisions concerning this power project.

Mr. WILLISTON: In theory, that is correct; in practice it was impossible to achieve until a federal government representative at cabinet level was willing to sit in on the negotiations and to assure the Americans that an agreement reached would be backed, in fact, by the government of Canada. And, I must say that we did not arrive at that negotiation position wherein the minister took that position until the Hon. Paul Martin made himself available and spoke on behalf of the government of Canada, so that the people in the United States knew that they were actually negotiating in good faith, and that if a negotiation was finalized it would be recommended and backed by the Canadian government.

Mr. DINSDALE: Now, the decision was made following a reference to the national energy board which, after careful study, indicated that it would be feasible to economically reverse this long standing prohibition. I notice at page 4 in the brief says:

At this point liaison between the then federal government and the government of British Columbia broke down.

Was this liaison not restored at a later date when Mr. Fleming assumed responsibility for conducting negotiations?

Mr. WILLISTON: The liaison which actually led to progress in negotiations broke down at that point and I, as representative of the government of British Columbia, was never again in conference with representatives of the then federal government until they no longer had responsibility for office. It is true, as you have said, Mr. Dinsdale, that as a supplement to our agreement, a meeting between finance ministers Premier Bennett and the Hon. Mr. Fleming did take place and was negotiated from March, 1961, and it was agreed that the outcome of the financial arrangements to be finalized between governments, which were involved with these technicalities, should proceed. But, even though that did not occur, I attempted to re-establish technical discussions with a liaison committee because certain very serious matters affecting

the Columbia river and, eventually, the treaty, came before me, which had nothing whatsoever to do with the financial arrangements which were being discussed between Premier Bennett and the Hon. Mr. Fleming. But, I was unable to establish those meetings. At least, the request I made to my co-chairman, the Hon. Mr. Hamilton, to re-establish these discussions never was finalized. As a matter of fact, I only received a reply to my request from his executive assistant.

Mr. DINSDALE: Would it be fair to say that following the former government's announcement that export of power would be admitted as government policy it then became possible to negotiate with the Americans on specific terms in respect of the price and the sale of the downstream benefits, which is basic to the success of the scheme.

Mr. WILLISTON: I would say that complete credit can be taken for a policy change position in so far as the export of power was concerned, and until that position had been taken, of course, it was impossible for those of us responsible in British Columbia to even initiate responsible discussions with the United States because we had no way of knowing whether or not they would be honoured by the government of Canada. So, they were purely of a supplementary nature. To get around the problem at that time we took the stand, rightly or wrongly, that these downstream benefits were not, in fact, power exported; it was power generated at United States generators. It was never in Canada and, therefore, we took the philosophical stand, if you will, in carrying out our negotiations, that such power need not come within the jurisdiction of the power export arrangements. That is how we carried on the discussions. I can assure you that the whole matter was clarified when a stand was definitely taken by the government that the export of power and sale of downstream benefits would be honoured, and your group at that time made a policy decision.

Mr. DINSDALE: Perhaps I could conclude my questions on this point. I should like to make one further observation; the export of power policy was not made as of that statement of March, 1962, specifically with reference to the Columbia river project, but also took into consideration the possibility of developing a Nelson River project. Would you say, Mr. Williston, that this policy, combined with the move to develop a national power grid, gave the government of British Columbia considerable encouragement in its power plans?

Mr. WILLISTON: Absolutely.

Mr. DAVIS: Mr. Chairman, I should like to ask a supplementary question. Did the previous government in power in Ottawa make it explicit to the province of British Columbia, when it had this change of heart in respect of the export of power, that it was prepared to sell its downstream benefit of power from the Columbia for a sufficient period of years to make the Columbia treaty projects financially feasible?

Mr. WILLISTON: May I say that they never said anything which would discredit this statement. I do not think they were positive in saying anything which would encourage us, but we as a group proceed forward so long as we are not discouraged. They have never said anything which would discourage us.

Mr. DINSDALE: Mr. Chairman, I think Mr. Davis used the phrase "change of heart". It was not a change of heart, it was a change of long standing Liberal policy.

The CHAIRMAN: Gentlemen, after these delightful asides I should like to draw your attention to the fact that we agreed to adjourn at 12.30. We have now gone 15 minutes over time.

An hon. MEMBER: Mr. Chairman, it is only 11.45.

Mr. GROOS: It just seems like 12.30.

Mr. WILLISTON: I am sorry we have been so boring.

The CHAIRMAN: I was beginning to feel sorry for Mr. Williston but I will now recognize Mr. Brewin.

Mr. BREWIN: Mr. Chairman, in an attempt to straighten the record I should like to read a portion of a statement made by Mr. Harkness in the House of Commons on March 6, 1964 in respect of the matter which we have discussed earlier. I should like to call Mr. Williston's attention to these remarks and ask him to make comment. Perhaps I should preface my remarks by saying that Mr. Harkness said:

I was exposed for a longer period and more intensively, I think, to the problems and ramifications of the Columbia river project than anyone else in the house, except the hon. member for Qu'appelle (Mr. Hamilton).

Then Mr. Harkness went on to say:

I think there is no question that we could have secured a better treaty with the United States than the one now under consideration.

I know you do not agree with that observation.

Mr. Harkness then continued as follows:

It will immediately be asked: Why did we not get a better treaty?

Mr. Harkness then goes on to say that he was convinced that a general plan of development very much along the lines of the proposal put forward by General McNaughton would have resulted in greater long term advantages. However, he says, to adopt what is generally referred to as the McNaughton plan would have involved the flooding of the east Kootenay region.

Then he states:

The province of British Columbia absolutely refused to agree to any scheme which would involve the flooding of those areas. This was the basic reason why the McNaughton plan, about which we have heard so much, was not proceeded with.

That statement does not seem to be consistent with what you have said here today, Mr. Williston.

Mr. WILLISTON: All I can say is that Mr. Harkness, to my knowledge, never was a part of any of the discussions which took place in respect of this subject and how he speaks so positively as to what the reasons happened to have been in respect of any decisions which were taken at any time I have no idea. I would say finally, as I have already stated and tried to state as forcefully as I could, we were selling a quantity of water under controlled storage from which we could acquire a profit for the people of Canada and British Columbia, and there was no economic profit associated with the flooding of the east Kootenay valley. When there is no economic advantage to be obtained from flooding a valley in the mountainous province of British Columbia we are strongly opposed to such flooding without any attached compensatory value. Certainly we took a very strong stand against this at that stage because there were no indications that there were any compensatory measures to be obtained by our province on behalf of the people of the province or the people of Canada.

Mr. BREWIN: Mr. Harkness then stated:

Therefore the responsibility for the fact that we are now debating a treaty which is not the best treaty that could have been secured must fall squarely on the shoulders of the government of British Columbia.

He goes on to say:

I think there is no question that we did the very best we could under those circumstances.

In other words, what Mr. Harkness is saying as I see it, is that in his view at any rate, the McNaughton plan was rejected because of the objections of British Columbia and that the responsibility for the debate on the second best treaty must fall on the shoulders of the government of the province of British Columbia. Do you agree with the assessment of the situation?

Mr. WILLISTON: I state most positively that the treaty we have succeeded in negotiating is the best possible treaty that could have been negotiated under the present circumstances. I will go further than that and say that it is a better treaty than I thought we were going to be able to negotiate as time passed.

I should like to accept the credit on behalf of British Columbia and say that it was due to our efforts solely that such a treaty was obtained. I cannot do that in all justice because a great number of technical officers and a great number of men in the political sphere have contributed as much as we have in British Columbia to the finalization of this document. I absolutely reject the statement of Mr. Harkness that this is a second best treaty. As far as I am concerned it is the best treaty obtainable. I will admit that it is even better, in the final outcome owing to these negotiations, than I thought we were going to be able to obtain.

Mr. RYAN: Mr. Chairman, I should like to ask one or two questions of Mr. Williston.

First of all at page 6 of your statement, Mr. Williston, you state that the British Columbia Hydro and Power Authority has spent over \$10 million for engineering studies and investigations in preparation for construction of the treaty projects. I am wondering whether that \$10 million has been included in the federal government capital costs for projects and I refer to the figure of \$447.7 million as set out in table 8 at page 96 of the white paper.

Mr. WILLISTON: Yes, the engineering costs are included as a basic cost in any engineering plan, and this \$10 million has been included along with the other costs. This is the basic engineering costs that have to be associated with the projects.

Mr. RYAN: At page 40 of your brief you state in the second paragraph as follows:

British Columbia has always been concerned with the possibility of United States diversions from these rivers—.

Referring to the Kootenai in the United States the Pend Oreille and from the Pend Oreille into the main stem of the Columbia.

—such diversions appear to offer a higher degree of feasibility than most of those which have been proposed within Canada.

Is there in existence a table by which we can compare these diversions as between the United States and Canada?

Mr. WILLISTON: I think you will have to ask that question of a technical expert in respect of this matter. There is no such table in existence, and there is no single expert who could speak with authority in respect of these diversions so far as I know. I think you will have to be specific in your questions and then direct it to the man or men who are competent to answer.

Mr. RYAN: Mr. Williston, would you agree that Ottawa was asking from the United States for more than ten years for 50 per cent of the downstream benefits?

Mr. WILLISTON: I have no evidence that they were asking for that amount of return. I do not imply of course that such a request was not made. The

first time we became aware of this in British Columbia was during the negotiation on principles which was carried out by the International Joint Commission at that time. However, I am not going to lead you back into those discussions. If you did do that, you would find that no firm position was adopted by the government of Canada concerning such a split of the benefits. As a matter of fact—and I do not wish to make things more difficult in this hearing—we spent the better part of a year in discussing the merits of so-called grossing and netting plans of which both sides had their proponents. This resulted in one report. I understand you are going to have a technical expert, an economist, Mr. Higgins, appear before you. This report was at first presented in the form of a working paper, but then it was disregarded completely. Therefore, there is nothing, so far as we are concerned, to point to the fact that the federal government had, at any time prior to negotiation, a firm and fixed position. It was established during the discussions on principles which took place under the general authority of the International Joint Commission.

Mr. DAVIS: I have a supplementary question for you, Mr. Williston. One of your officials, you said, has worked on this subject for a good many years, perhaps into the early 1950's. I would like to ask him whether it is not a fact that some sharing of the physical downstream benefits was first envisaged during the discussions concerning the first Libby proposal back in 1951?

Mr. A. F. PAGET (*Deputy Minister of Water Resources, Province of British Columbia*): There was some discussion on the original application but it never got very far. The basis of the argument was that British Columbia would share the cost of the Libby project equally with the United States as well as share the benefits equally. The fundamental argument against this, and the reason it was not attractive, was the fact that Libby was a fairly high cost project. The United States position would be supported by a low interest rate while the Canadian position would be supported by a relatively high interest rate so the actual cost would be high for Canada.

Mr. DAVIS: The results were not conclusively favourable to Canada but the concept of the equal division of downstream benefits was being discussed internationally prior to 1951.

Mr. PAGET: Actually there was no definition. This might have been considered a leading position on the United States side, to develop their own resources, but there was no clearcut demonstration that this would occur in respect of strictly Canadian storages. It was certainly because of that lack of understanding that the Canadian position was stated to be clearly against the Libby proposal.

Mr. DAVIS: In other words, the United States would not agree to the concept of equal sharing and this is one of the reasons why it failed.

Mr. PAGET: This had only been a tentative discussion and had never reached the point of a negotiation of any substance.

Mr. RYAN: I have one more question, Mr. Chairman. Mr. Williston, I should like to refer you to the letter, already quoted by Mr. Davis, from Premier Bennett to the Minister of Finance at Ottawa, Mr. Fleming, dated January 13, 1961, just four days before the treaty was signed in Washington on January 17, 1961, and more particularly to the words in the third paragraph:

Like the federal government, British Columbia is anxious that the Columbia development proceed at the earliest possible moment—assuming of course that it is proved feasible from engineering and financial standpoints.

Now, it seems to me those are very unfortunate words at that critical time. I wonder whether we could have a clearer explanation of what Premier Bennett meant.

Mr. WILLISTON: They are not unfortunate at all. At that stage, before we proceeded with the negotiations, as the responsible officer in the province I had to report to my premier and chief financial officer—on the definitive engineering plans which indicated that this arrangement could in fact be carried out. I went into these negotiations on behalf of British Columbia prior to ratification on the understanding that we would take these estimates as we had them and that there would be a delay to allow us to engineer, to license and to calculate our financial position in relation to these projects prior to ratification. Everyone met those requirements but for the unusual situation in the United States where the republican administration which had negotiated this treaty was going out of office. And so, without the benefits of either the engineering data, which I could not give to the premier or the complete financial data which it was impossible for him to determine himself in the light of the information available, he placed that proviso, and rightly so, on the record at that time prior to ratification. The United States people acknowledged the fact that we had this definitive engineering to carry out. How you can assert a complete financial practicability of a project before you have in fact carried out the engineering to determine whether in fact the project can be carried out, I do not know. I think it is a proper letter to be filed by anyone who has a responsibility on behalf of the finances of a province.

Mr. FLEMING (*Okanagan-Revelstoke*): I have just one other point. The minister used the word "ratification". I think in this case the treaty was signed, and ratification was in abeyance so far as Canada was concerned. The treaty was signed at that time, not ratified.

Mr. WILLISTON: This was double-barrelled. It was signed on behalf of Canada and the United States, and part of the reason for signing at that time was to enable the then republican government to ratify on behalf of the United States. We wanted no misunderstanding on the part of the United States as to what the British Columbia position was. We had to assure the United States that automatic Canadian ratification would not take place until these things were carried out.

Mr. FLEMING (*Okanagan-Revelstoke*): You did not wish to see ratification by Canada until you clarified the engineering points yourself?

Mr. WILLISTON: We could not.

The VICE CHAIRMAN: There is one thing I wish to mention at this time. The next speakers I have on my list are Mr. Byrne, Mr. Herridge, Mr. Chatterton and Mr. Cameron. I think the question concerning supplementary questions is a good one because it brings attention to the point at issue, but I am going to suggest to the committee that if any member has a series of supplementary questions, perhaps four or five of them, at the same time he might indicate he might want to ask questions at a later time; otherwise we might get off the track. I would suggest that the Chair would be willing to entertain some supplementary questions, but if there is a long series of them I would prefer—because I think it would keep things in better order—if members would indicate that they wish to ask such a series.

The next inquisitor is Mr. Byrne.

Mr. BYRNE: Mr. Chairman, I would like to put a couple of questions to Mr. Williston.

Mr. Dinsdale seems to attach some significance to your statement that "a happy result was the signing of the Columbia river treaty on January 17, 1961". Would you say that it was an equally happy result to participate in the third anniversary and the signing of the protocols in 1964?

Mr. WILLISTON: That was a more happy day because at that time we could definitely see, both from an engineering standpoint and from the standpoint of a positive arrangement for the sale of benefits, that this project could definitely proceed to our mutual benefit, to the benefit of Canada and the United States. So, if I was happy in the first instance, I would say that I was ecstatic in the second.

Mr. BYRNE: Were there any representatives of the British Columbia government at the historic signing in Washington in 1961?

Mr. WILLISTON: There were no direct representatives of the government of British Columbia present.

Mr. BYRNE: In 1964?

Mr. WILLISTON: Yes, I was honoured to be present in 1964, and I was truly pleased to be there.

Mr. BYRNE: I would like to go into the question of the decision respecting a 50 per cent return of downstream benefits for Canada.

In answer to Mr. Davis it was indicated that there was no real or definitive negotiating in respect of the return of downstream benefits over the past ten years. Is it not true that General McNaughton, as the chairman of the Canadian section of the International Joint Commission, has made this paramount requirement of a co-operative development of the Columbia since actually he took over negotiations on the part of the federal government?

Mr. WILLISTON: I would have to answer no, because the economic report to which I made reference was the work of a group chaired by General McNaughton, and at that time they brought in the netting report.

Mr. BYRNE: Is that an integrated system?

Mr. WILLISTON: It is an integrated system, and the first actual definition was in the International Joint Commission principles that were brought out on December 29, 1959. However, in the negotiations for those principles, several alternatives were propounded. The final position was incorporated in the principles that were agreed to on December 29, 1959. However, in arriving at those principles other discussions took place which would indicate that no fixed policy had been determined even by General McNaughton concerning that matter until this principle had finally been reached.

Mr. BYRNE: It is true, then, that it was as a result of the negotiations between the two sections of the International Joint Commission that they arrived at the principle which provided for a 50 per cent return of downstream benefits?

Mr. WILLISTON: That is the first time it was actually asserted and defined.

Mr. BYRNE: I have no desire to go back to the dispute or the disagreement we had over the boundary waters improvement act; however, I am sure Mr. Bonner will recall that the whole basis of General McNaughton's argument at that time in 1959 was: should the Kaiser dam be built? Should we be committed to such a large amount of water that it would render the Fraser river diversion impractical? Whether or not he actually said it in his presentation at that time, it was understood that he was endeavouring to maintain all our storage at high levels in order to make this diversion feasible and in order that he might convince the United States section of the International Joint Commission that they should at least accept the principle of downstream benefits whatever the proportion would be.

I think you would accept that as a statement of fact rather than as a question.

Mr. DAVIS: As a supplementary question, I think Mr. Bonner will recall that General McNaughton at that time—namely, in 1955—was strongly advocating a 50-50 diversion of downstream benefits.

Mr. BONNER: On that point, Mr. Chairman, there had been many assertions over a period of years by many people, including General McNaughton, about the desirability of division of downstream benefits, but in point of fact, prior to the time the International Joint Commission was charged with delineating these principles, there was no fixed division. That is my understanding and no one has said anything to the contrary on behalf of the Canadian government. This was most clearly demonstrated in the introduction to the International Joint Commission principles which were ultimately published on December 29, 1959. In fact, had some of the proposals been translated into policy they would have produced a most unfortunate result with respect to the treaty discussions that we are participating in today. We would not in effect be discussing arrangements of a beneficial nature. I go further and say that some of the proposals would not have permitted us to arrive at this arrangement at all.

Mr. DAVIS: It would certainly be true to say that the International Joint Commission meeting which resulted in the principles represented, in 1959, the first occasion upon which the United States agreed that a division was desirable.

Mr. WILLISTON: That is correct.

Mr. DAVIS: Canada, in other words—or some people in Canada—were pressing for a division long before that, but in 1959 it was agreed as a principle?

Mr. BONNER: Yes, but of course you cannot advance a principle unilaterally across the border; it has to have acceptance. Until it does have acceptance, it only represents a point of view.

Mr. BYRNE: This principle was embodied in and was a result of negotiations within the International Joint Commission?

Mr. BONNER: Yes.

Mr. BYRNE: And it was the United States section of the International Joint Commission that came to the conclusion that this was a fair arrangement?

Mr. BONNER: In fact, in so-called recent times the first recognition on behalf of the United States that a division of downstream benefits would be contemplated—and this was not at the official level—was memorialized in the proposed Kaiser arrangement, which has been the subject of some discussion. It was thereafter that things began to crystallize and take shape. There had been no previous recognition, regardless of your view of the Kaiser proposal, at that time.

Mr. BYRNE: A 20 per cent return of downstream benefits?

Mr. BONNER: No, plus. You can refer to my testimony of ten years ago if you want to go into that again.

Mr. BYRNE: I would prefer to leave the testimony of 1955 in the archives.

Mr. BONNER: I am very happy for them to be left there too.

Mr. BYRNE: We accept, then, that this treaty would not have been in any way acceptable to Canada if we had not arrived at the decision—and I am referring to the federal authorities and the United States—to pay a return to Canada for the downstream benefits. There was no question about that. This treaty would have been of no consequence.

Mr. WILLISTON: That is right.

Mr. BYRNE: We must also accept the fact that General McNaughton played a significant role in convincing the United States authorities that this was a fair principle.

Mr. WILLISTON: Let us put on the record right here that as far as the British Columbia government and people are concerned we all have differences of opinion; but certainly we assert most strongly that General McNaughton has made a great contribution not only to British Columbia but also to Canada for his stand and his work and efforts on behalf of all of us in so far as this arrangement is concerned. Whether we agree in detail with some of the matters in the long run, I do not think is the final criterion by which to establish General McNaughton's position in the over-all sequence of events which have transpired. He is entitled to the credit of Canadians generally and of the people of British Columbia in particular for the work that he has done and I still count him as a friend even though we disagree. I still think that within his interpretation and within his point of view he honestly thinks that he is on the right track, while we think he is not on the right track. But that is neither here nor there.

Mr. BYRNE: In my questioning I am in no way attempting to establish that sequence IX or the McNaughton plan is the one we should adopt. I am in complete agreement with the present treaty and I heartily support it. I just want to establish on behalf of General McNaughton that there is no question that his negotiations over the years—and they were over quite a number of years—did result in the United States accepting the principle of repayment of downstream benefits, and secondly, however grandiose the claim may have been, the threat to divert into the Fraser river was of some consequence.

I wonder if it would be permissible for me to read two short paragraphs from the evidence given before the senate committee by Senator Lausche in respect of this matter?

The VICE CHAIRMAN: I have no objection, unless somebody else has.

Mr. BYRNE: At the time the Columbia treaty was before the senate committee this and similar statements were made by several senators, but I shall just read one.

Mr. DAVIS: You mean at the time of the international group?

Mr. BYRNE: I mean when the draft treaty was before the United States Senate for ratification.

The VICE CHAIRMAN: Since there is some little confusion would you mind giving us the time, the date, and the place?

Mr. BYRNE: It was on March 16, 1961, at page 4140 of the congressional record, and I read as follows:

Congressional Record—Senate, March 16, 1961, page 4140.

Senator Lausche. Well, in your mind there undoubtedly existed the thought that if the United States had the authority to, or did, divert out of the Great Lakes Basin, correspondingly Canada would be justified both legally and morally to divert the Columbia into the Fraser.

Mr. White. I would not put it that they would be justified. I would put it that it would have served as a stimulus for their giving more active consideration to diversion out of the Columbia River Basin.

There are other statements in here, but I will not take the time to read them. They indicated why the senators were happy with this agreement, because while it did establish a 50 per cent return of downstream benefits to Canada, it did guarantee that there would be no diversion of the Columbia in Canada. That is all.

The VICE CHAIRMAN: Are there any further questions?

Mr. HERRIDGE: Mr. Chairman, in view of the information you gave us in respect of the fact that the government of British Columbia had certain

reservations with respect to the treaty at the time it was signed by Mr. Diefenbaker, may we infer from that, in view of the fact that the treaty was signed and presented to the house and certain tables were given to the house with respect to costs and to benefits, that the government of the day was giving us information knowing it was not accurate?

Mr. WILLISTON: The government of the day was giving you information based on the best estimates that were available to them at that time. You must remember that British Columbia was directly involved and that we could not outline our future actions on the basis of estimates. We had to proceed on the basis of facts, and the only way we could proceed on the basis of facts was to carry out definitive engineering in order to make sure that you could in fact do the things you were said you were supposed to do. Certainly, in the first instance, before you even start engineering, you must have the most competent brains possible to get you an estimate or you are in no position to spend engineering money as a second step; and I would think that our engineers with federal engineers were exercising their best good faith in the estimates which they presented at that time. There was no indication on anyone's part that incorrect information was being supplied. They were being supplied with estimates only, and I think anyone who examined the proposition at that time was satisfied that that in fact was the case.

Mr. HERRIDGE: In view of the fact that you told us that the hydro authorities spent \$9 million since that time—

Mr. WILLISTON: I believe it was \$10 million.

Mr. HERRIDGE: Pardon me, yes, \$10 million, in investigation, does it not indicate that they certainly were of the opinion that the figures were by no means accurate?

Mr. WILLISTON: No, I believe, the money was spent in preparing design estimates preceding construction; that is, with all the drilling that takes place. Remember, as I indicated in my presentation, that people are advocating very strongly sequence IXa, and that in one dam site in particular they only had two holes drilled down in the whole area, and they never did encounter any kind of stabilized base for the dam, yet we have people strongly projecting the whole sequence of events and costs and everything else on the basis of that evidence. I submit that you cannot finally decide on what you are going to do unless you drill across the site and prepare your engineering drawings in great detail, and this was very tough in so far as the Arrow was concerned, because world renowned experts had to be brought into the picture finally to determine the type of structure which should be built at the Arrow lakes. We had to take the testimony and the recommendation of the best qualified people in the world for the design that was to be placed at that site, and you have to pay for that information.

Mr. HERRIDGE: In view of the fact that the premier of British Columbia has said that you would not accept less than 5 mills United States funds, why then did you accept 3.75?

Mr. WILLISTON: The fact of the matter is that we did not accept 3.75, and I think that until you have brought the cost estimates up, and until these negotiations are carried out—this suggested price was of great value. Let me detail that to you when I get back to my reference where I indicated it. This is politic, remember, sir, on both sides of the border. If somebody will get me the page and tell what it is I will refer back to it. In the meantime whoever gets the page will find it in the notes of my own presentation. But I will say this: the United States decided to justify its position, and it was 3.75 mills United States on a load base of 60 per cent. But that was not the actual basis upon which this power would be provided to them. They were working on a

base that was provided to them of 60 per cent. We adjusted it, because it was only provided to them on a 48 per cent load basis.

The statement to which I referred is on page 24 of the brief. If you equate the actual base upon which they are receiving this power, from the 60 per cent to the 48 per cent which is the load factor which actually prevails in United States sale terms, that raises the price to 4.1 mills U.S. or 4.4 mills on the Canadian basis. If you add your flood control payment which was a part of the over-all proposition to the figure, the net return per mill for the development of the Columbia river came to 5.3 mills Canadian. That is substantially above the figure. With the payment of the money in advance, I believe we will get more than 5.3 mills. This is predicated on the fact that this advance payment which is made by the United States to British Columbia will only draw an interest rate of $4\frac{1}{2}$ per cent on the capital account, and anything in the way of investment that can be made on this money over and above $4\frac{1}{2}$ per cent will increase the net return of 5.3 mills per kilowatt that we receive for the downstream benefit.

Mr. HERRIDGE: It is 5.3 mills United States funds?

Mr. WILLISTON: It is 5.3 mills Canadian funds.

Mr. HERRIDGE: But your premier said he would sell the power for five mills U.S. funds.

Mr. WILLISTON: You will have to provide the evidence upon which to back up your statement. The premier always has spoken in terms of Canadian return. He is responsible in Canada and he always has spoken in that regard.

Mr. HERRIDGE: Mr. Williston, I will provide the evidence. I would like to quote from a speech made by Dr. Keenleyside, chairman of the British Columbia Hydro and Power Authority on December 15, 1961. He said:

But if the downstream benefits are sold in the United States what would happen?

1. British Columbia would be paid five mills in U.S. funds for about one million kilowatts.

Was Dr. Keenleyside telling us the facts at that time?

Mr. WILLISTON: I think you have to take into account all the background information at the time Mr. Keenleyside made this statement, and you have to take into consideration the value of money and everything else. In any event, I would suggest you ask Mr. Keenleyside to explain his own figures. We were talking about the premier and I think it is well known that he generally speaks for himself.

Mr. HERRIDGE: You do not suggest that the chairman of the British Columbia Hydro and Power Authority would make public statements contrary to statements of the premier of British Columbia?

Mr. WILLISTON: I would suggest that you are talking about Mr. Keenleyside's statements, and since he is a witness that you should satisfy yourself by questioning him.

The VICE CHAIRMAN: Owing to the previous arrangement, we will adjourn at this time to reconvene at four o'clock in this room. The first person on the list to ask questions is Mr. Chatterton, followed by Mr. Cameron.

The meeting is adjourned.

AFTERNOON SITTING

TUESDAY, April 14, 1964

The CHAIRMAN: Gentlemen, I see a quorum. Will you proceed with the questioning of the Hon. Mr. Williston.

I believe Mr. Chatterton has the first question this afternoon.

Mr. CHATTERTON: Mr. Chairman, my questions are more related to the multiple use of the storages and the surrounding land which, I know, is directly the responsibility of the provincial government. However, I think many members are interested in this aspect of it. Of course, I realize that your licensees are interested in power, and I realize under conditional water licences certain obligations are placed on the licensee. For instance, for each of the three licences, the licensee shall clear the reservoir in the manner and to the extent directed by the comptroller after consultation with the deputy minister of forests. Can you indicate to us the degree to which flooding is anticipated, which the comptroller might order the authority to do?

Mr. WILLISTON: One of the reasons it is not detailed on the licence is that the clearing specification in the various reservoirs will be somewhat different. The final responsibility, as has been indicated, for the cleaning of the reservoir comes between the comptroller and the British Columbia Hydro Power Authority. But, may I say from a government policy standpoint the reservoirs will be cleared of all standing merchantable timber. That does not mean that all the minute scrub and bushes, and things of that nature, will be removed within the reservoir area, but it does mean that all navigation and recreational use will be maintained; not only "be maintained" but "assured". A higher level of clearing is contemplated in the Arrow lake region where recreational amenities are required and some of these areas are being displaced through flooding. This would be the case in respect of either Mica creek or behind the Duncan dam site.

Mr. CHATTERTON: When you refer to "clearing" are you referring to stumps also?

Mr. WILLISTON: I am not referring to taking out of the stumps completely; no; I am referring to the cutting of them down close to ground level.

Mr. CHATTERTON: Is it anticipated that some of the clearing will be done after the flooding as circumstances would demand or is it anticipated that some of the clearing, including the stumps, would be done in advance of the flooding?

Mr. WILLISTON: The merchantable timber would be taken out in advance but the area will be cleaned up with the actual draw downs. Since these are draw down reservoirs it is possible with sweeping operations it makes it economical and easy to handle the debris and disposal by collecting it in certain areas during draw down periods and disposing of it by means of water transportation at that time more efficiently than in any other way.

Mr. CHATTERTON: I see; in reply to the proposal you set up an over-all authority, that in the case of T.V.A., which you used as an example, the jurisdictional problems necessitated one authority, which is not the case in British Columbia; but, nevertheless, you have many departments, a department of recreation; a department in respect of roads, the department of public works or the highway department, and the department of forestry. Are you considering even a committee composed of representatives of the various departments involved in respect of the multiple use of reservoirs and adjoining lands.

Mr. WILLISTON: That general co-ordination such as you suggest is provided by the cabinet, with particular responsibility to myself as Minister of Water

Resources, under which department comes the licensing and the carrying out of these various functions. The other liaison which develops between the hydro entity, the cabinet and the departments, including recreation, comes about because both myself and my colleague, the Hon. Kenneth Kiernan, who is also a director of the hydro authority, are part of the cabinet. The authority and the responsibility is in the Water Rights in so far as it concerns this series of projects.

Mr. CHATTERTON: Have you prepared an over-all plan for the multiple use of the whole basin area?

Mr. WILLISTON: The departments which are concerned, include Recreation, and Conservation and the use of the areas for forestry, that is forestry matters, both the clearing and the salvage of the timber values in the basin areas, are the responsibility of the forest service. These functions at the present time are being co-ordinated, it so happens, through myself, because forestry, land values, water values and a liaison with Hydro all come within my own particular responsibility.

Mr. CHATTERTON: But, for instance, not recreation or wild life?

Mr. WILLISTON: No, but Mr. Kiernan has that and he is a director of Hydro as well.

Mr. CHATTERTON: Have you considered drawing up a regional development plan with one body which would take into account all these various uses, even if you appointed one officer to be responsible for the regional development of the area, in respect of multiple uses?

Mr. WILLISTON: No, we have not envisaged that sort of an approach. There are certain statutory powers that are vested in various departments and there is no one authorization that would allow the vesting of these powers, in turn, to a separate authority. We are working on the group or committee approach, if you will, for the resolution of such problems and difficulties as may arise.

Mr. CHATTERTON: Even if such an authority or body would have merely an advisory capacity would it not be an advantage to have an over-all plan?

Mr. WILLISTON: Well, it may receive consideration, but it has not been felt necessary thus far. But, we do meet with highways, forestry, recreation and conservation people, together with the water authorities, at the present time, and this is not in any way a single approach to the problem.

The CHAIRMAN: Would you proceed, Mr. Cameron.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, I should like to ask Mr. Williston some questions in respect of a different point of view from what we have had so far, namely in connection with the choice of the two schemes or the variations of the two schemes. Unlike my friend, Mr. Herridge, I am not particularly attached to one area. In fact, I would just as soon drown Mr. Herridge as anyone else. But, I notice you have stated in your brief and also in the evidence you have given here that one of the compelling reasons that made the government of British Columbia reject the Kootenay project was that it would result in flooding losses and disruption far exceeding those involved in any other area in British Columbia. Was that one of your major reasons for rejecting sequence IXa?

Mr. WILLISTON: Mr. Cameron, let us get back to a few basic facts here. I would ask this committee, at the time General McNaughton is your witness, to ask him to specifically detail a plan of development, with the sequences of the various projects added in, the transmission, the whole type of development that was envisaged in this so-called McNaughton plan, because my engineers and myself, as well as all our technical advisers have been in this from the beginning and, other than to hear people talk, no one has as yet

examined in detail any so-called sequence IX or IXa project, which was an either/or proposition in so far as development of the Columbia river is concerned.

With that preface, our stand was, as I indicated to you this morning, that when we receive credit for the storage behind High Arrow and Duncan and the additional storage behind Mica Creek the amount of storage that we could effectively sell to the United States authority at that point would be so inconsequential that it would be a travesty to flood out the east Kootenay for the value that would be returned either to the people of British Columbia or to the people of Canada. This is because there was no compensatory value other than I have already stated. That was a very strong reason for my statement that we have little enough flat land in British Columbia as it is.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Williston, I wonder whether you are aware of and have read a memorandum from the federal Department of Agriculture dated June 14, 1960, in respect of this question of the effect on agriculture of construction of reservoirs on Columbia and Kootenay rivers between Luxor and Dorr? I think it has a bearing on this point and if the Chairman will permit me perhaps I may read it and you can make some comment. It states as follows:

The building of a reservoir on the Kootenay and Columbia rivers from Luxor south to the Dorr damsite would flood some 91,000 acres of land. Of this, 24,000 acres, if reclaimed, is arable without irrigation, but only some 2,800 acres of river bottom soil, all in the Kootenay basin, are used at present, primarily for the production of tame hay in association with summer cattle grazing on the uplands. About 40 farmers are involved. The remainder of the 24,000 acres would require very costly reclamation to make it usable.

There are also some 26,000 acres of land in the flooded area with some agricultural potential if irrigation could be provided. The availability and cost of utilizing water from the Kootenay, however, makes this virtually impractical for the low priced crops which could be raised in the area.

In comparison to this there are some 300,000 acres of land in the area, above the level of the reservoir, which is as potentially arable with irrigation as the 26,000 acres in the reservoir area. If the reservoir water could be provided for irrigation the reservoir, in fact, increases the agricultural potential of the area.

If the building of the reservoir resulted in the control of flooding of the Columbia above Luxor an additional 20,000 to 30,000 acres of arable land in the Columbia flats, which cannot now be used because of flooding, could be made available.

Mr. Williston, I expect that you have had your finger tips, as I once had, on information in respect of land in your province that is suitable for agriculture, but as I recall it there is something in the neighbourhood of five per cent while the rest of it, and you may correct me if I am wrong, is standing on edge. Do you not think that the possibility of adding to that percentage and to the very limited agricultural resources of your province of some 3,000 acres of land should be considered by the government of British Columbia in making a decision of this kind?

Mr. WILLISTON: I think in making that statement, sir, you should read very carefully the wording that has been used. If you were to read it to yourself again, underlining certain words, you will see that 3,000 acres of land is as potentially arable and valuable as certain other lands that are in the east Kootenay area, and any of us who know the Kootenay area appreciate

the troubles and problems that they have had with irrigation and will realize full well what are the limited uses of this land. Accepting the use of this land primarily as agricultural, and that is implying intensive use of irrigation, these 3,000 acres of land would be as potentially valuable as the other area which is not, as you know, as valuable as other areas of highgrade agricultural development in so far as our province is concerned. Over and above that, however, these bottom lands happen to be very favourable for limited game animal grazing land, and the potential value to us is determined in that regard along with forestry, and I refer to the east Kootenay region. This is a marginal cattle raising area, and at the present time I am informed that the grazing values compared to other grazing areas in British Columbia are very low. From a game management standpoint, this is one of the highest use areas in the province of British Columbia. I think that if you interpret that agricultural report in terms of favourable agricultural use of land you will arrive at a much better interpretation of what is meant.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You yourself in your report stress the damages to be done to this district by flooding this agricultural land, suggesting at the same time that aver ten times that value, or potential value, is not worthy of consideration. I do not see how you reconcile the two positions.

Mr. WILLISTON: Mr. Cameron, with all deference to your suggestion, I do not think you understand that in respect of the irrigation lift necessary to irrigate this land you are thinking in terms of lifting the water a certain number of feet from a reservoir only, because the water is there available in the River as it now is. The land is still there. The water is still in the system. The only difference lies in the lift to get the water on the land, because it is still there and available; nothing has been done to it.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): There is the slight difference amounting to 150 feet.

Mr. WILLISTON: There is the great additional benefit resulting from the hydroelectric power which will eventually be made available at a sufficiently low cost, allowing full economic use to be made of this land.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I have noted throughout your brief, Mr. Williston, that there has been no mention whatever of water, per se, as a resource. Again and again in your brief you have stressed the fact that the only consideration that you and your governmental officials have had has been in connection with the production of power or the financial returns from the sale of water controlled in the United States in respect of downstream benefits. At several places in your brief you have chided those who persist in thinking in terms of past eras. Would you not think at this particular time, a time when we have this situation which you have stressed once or twice in your brief regarding the possible advent of nuclear powered electric energy development, that you should consider the situation in conjunction with the expected acute shortage of water on the North American continent particularly in the western half? One has only to look at the situation which has developed in the state of California, as a result of the demand made by the city of Los Angeles on the water supply, lowering the level of available water which has resulted in legal actions taken by adjoining states, to realize the seriousness of the situation. I feel it is irresponsible on the part of the officials making this decision not to have taken this situation into account.

I notice at page 41 of your brief that you dismiss in a rather cavalier fashion the reliable technical advice that has been given in respect of the need

for water in the province of Saskatchewan. In paragraph 2 at page 41 you state:

There is no reliable indication of a probable need for such water in Saskatchewan. By using the same type of projection of population statistics, it could have easily been proven that all this water will be required for the same purpose in British Columbia in about the same time, owing to our much greater growth rate.

I cannot understand how you reconcile your position with the statement appearing in Mr. Lloyd's letter of June 21, 1962 to the Hon. Walter Dinsdale, the then minister of northern affairs and national resources which states:

The available flow in the Saskatchewan, however, is limited and a large portion of the flow has already been reserved. According to the 1960 annual report of the prairie provinces water board, over 5 million acre-feet of the flow of the south Saskatchewan has been allocated or reserved for consumptive use on existing or proposed projects. This is 45 per cent more water than the minimum recorded flow of the river and amounts to 70 per cent of the average annual flow.

Later on he says:

In view of this, it would seem that in spite of the best conservation of water, secured by the South Saskatchewan and other like projects, the prairie provinces face a water shortage that could become acute within the next 30 to 50 years.

Now, Mr. Williston, would you not take it for granted that the premier of Saskatchewan not being, like yourself, qualified technically to deal with these matters, would seek adequate technical advice before making such statements? Would you not also think, Mr. Williston, that the statements of Dr. Davis Cass-Beggs, the general manager of the Saskatchewan power authority to the same effect repeatedly made in public should be taken into account and should not be dismissed in this very lofty and cavalier manner adopted in your paragraph No. 2?

Mr. WILLISTON: First of all, speaking to your objection to a cavalier statement, I will not accept it.

On the second subject dealing with the irrigation of lands in the Columbia valley, I did not complete my statement. By far the cheapest method of handling a large portion of the 300,000 acres to which you made reference is by using stream flows presently existing in the area at the elevation at which they would be of greatest advantage. They are not even being used at the present time, so that the presumption that all of this water has to be pumped up to that elevation to irrigate those lands is in fact not correct.

On the second point, in so far as water use is concerned we have reserved throughout the treaty the right of consumptive use of the waters throughout the Columbia river system, and the fact that we are placing storages and will continue to place storages throughout the Columbia river system indicates that that water can, and in its stored state will, be available for other uses, certainly recreational as well as consumptive.

I do not think it should be a matter of concern to this committee that the obvious things which are apparent to all should have to be stated with great clarity and force before a committee before they occur. It is a fact of life and the provision is there. We, together with yourselves and others, thought that the treaty made ample provision for this and that the storage in itself would allow for this multiple use.

On the last point you were making concerning the waters of the Saskatchewan and their need, the greatest part of the water requirement, if you put

Columbia water into the South Saskatchewan river, is not to irrigate or to use waters in Saskatchewan but to use for lands in southern Alberta, not in southern Saskatchewan. Southern Saskatchewan would be serviced to a degree but, as indicated in our brief, there are large quantities of water available for economical use within Saskatchewan through diversion from the Peace river ultimately together with the Fraser river diversion from the Fraser to the Peace into the Saskatchewan river system, which in fact could be transmitted then to the Qu'Appelle valley and made available throughout the prairie region. Those facts were stated. What we are arguing about, if arguing we are, is water for a limited area in Alberta, in so far as we are concerned with costs which has not been related to anything in the realm of practicability. Mr. Cass-Beggs, and others who have spoken on this fact of the utilization of water, acknowledged that the cheapest water available to them is the water which comes to them through the Peace and Athabaska into the Saskatchewan river system and which is readily available. So I do not think anyone is being cavalier. I think we are trying to be as practical as possible in the handling of the resource which happens to be our responsibility.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Williston, are you aware that Mr. Cass-Beggs has already dealt with these other sources of water and has publicly stated that it is the intention of the Saskatchewan power commission, of which he is the head, to utilize those within the next ten years? He estimates that probably shortly after that period it will be necessary to come back on the Columbia.

Now let me come back to another question. You suggested to us, Mr. Williston, that if you store this water at 1,410 feet above sea level it will be possible then to take it to the prairies, in distinction to storing it at some 2,600 feet. Would you not admit that unless it is stored at the highest possible point there can be no possibility of you being able to supply the rather modest requests of Saskatchewan to hold the door open for 30 or 40 years?

Mr. WILLISTON: I think you are in some degree of confusion, Mr. Cameron, because the 1,410 figure is the previous figure that no one is using for the Arrow lakes, and that was raised from 1,402 to 1,410, and no one would ever consider moving water from the Arrow lakes to the prairies. Actually what we are confused about is the area behind the Mica or Calamity curve dams which is at a much higher elevation, and there is nothing to preclude the placing of additional storages above Mica creek to act as a regulating pool to pump up the 2,500 feet proposed in the scheme to which you were making reference—there is nothing to preclude that being done in the future if it proves feasible.

I would suggest in all sincerity, and you may take it as you will, that if a government of a province is indeed serious about the utilization of the resource of another province, you would think that at least that province would indicate to the other provinces which are concerned, and certainly the province which owns the resource, which is British Columbia, and the province through which the transmission of the resource has to take place, which is Alberta, that they wish at least officially to come to these governments and have discussion with them concerning that resource before they entered into a publication such as you suggest. As the responsible authority in British Columbia there has never been any official representation made to our province to even discuss the matter.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Let us get back to where we were, shall we? There may be confusion, Mr. Williston, but it is not on my part. I want to put it plainly to you: Are you seriously telling this committee that if this water is not stored at the highest possible level in the

first instance it will be possible to meet future demands from the prairie provinces?

Mr. WILLISTON: That is true. I think I said "at the highest level which was anticipated in any pronouncements I was able to read by Mr. Cass-Beggs". Incidentally, I have even had to secure those pronouncements from others; I have never been provided with any copies of these pronouncements and I happened to get them rather surreptitiously from others. As I have already indicated, the highest level they have been using is behind Calamity Curve dam.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Williston, since we are not going to get very far on this point we should perhaps wait until Mr. Cass-Beggs comes.

I notice throughout this brief of yours, Mr. Williston, there is a series of unsupported assertions. I have no doubt they are perfectly right, but you will understand, Mr. Williston, that, like you, I am a layman and I have to judge between the various technical experts who will be appearing before us. We will be hearing technical experts who will be appearing to protest against this brief of yours. I would like you to come with me through the brief to several places where it will appear that you have made an assertion but have not backed it up with any reference to any technical authority.

On page 10, for instance, we see:

Nuclear power has yet to fulfil its early promise, but technical advance in this field appears inevitable, and a time may be anticipated when nuclear fuel rather than coal or natural gas might be the economic competitor with hydro power in British Columbia.

I presume there have been some studies on this matter. Could we have some references perhaps?

Mr. WILLISTON: There are several indications. I would say to you first of all that one that is readily available to you is the British white paper which has been made available by the British government. Then there are the recent studies which have been undertaken by Pacific Gas and Electric in San Francisco as a prelude to the establishment of their new station just north of San Francisco. There are other statements following through the technical journals which I think every one of us can obtain.

We have the Hanford development south of us on the Columbia river in the U.S. at the present time, which is a joint use between the production of plutonium and hydroelectric power.

These things are all readily available to anyone interested in the subject. I would suggest some of them could be obtained for the committee's use.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): On page 12 there is a reference to the Kootenay river diversion plan.

This maximum diversion plan had two features which commanded attention: it provided maximum at-site generation in Canada, and was the least favourable plan for the generation of power in the United States because it eliminated the Libby project.

I presume that is a statement from some technical report.

Mr. WILLISTON: It is a statement of fact contained within the ICREB report.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): On page 23 there is a statement that interests me greatly because it deals with a possible project that does not seem to have received very much support:

Because of extremely variable flows, British Columbia streams have a great need for control of freshet flows by storage projects, but in most cases the value of the non-power benefits cannot justify the storage

costs, which in our present national arrangement can only be paid for by power benefits. For example, flood control is urgently needed on the Fraser river, and the recent report of a joint federal-provincial board, "Final Report of the Fraser River Board on Flood Control and Hydro-electric Power in the Fraser River Basin" indicates that this flood control could be paid for largely through the sale of electrical energy to be generated in connection with the flood control storage. The loss of the prospect of achieving control of this and other rivers in British Columbia at little or no cost to government revenues would be a serious loss indeed.

Did the Fraser river board on flood control report any possible damage to the fish industries of British Columbia?

Mr. WILLISTON: Yes. The fisheries officials were an integral part of the study group engaged on the Fraser River Board report, and, when the Fraser River Board report was presented, it was a joint report assented to and written in part by the fisheries officials.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): At the top of page 26 one sees:

Cost of power no longer has the great significance to the United States aluminum industry it once had, and in fact availability to markets and transportation costs are such over-riding factors today that expansions to this industry in the United States are now being made on the eastern seaboard and Mississippi valley with thermal energy providing the power.

What authority had you for the statement that cost of power no longer has the great significance to the United States aluminum industry that it once had? Has there been a statement from the industry?

Mr. WILLISTON: The statement is based on the simple fact that they are locating their plants in thermal areas with thermal generation to provide their power, and the thermal generation price level nowhere has decreased to the level, for instance, of the power in the Columbia river used for aluminum production in the United States.

As a matter of fact, thermal generation costs have not reached that point; but if I had the capacities that have been included and expanded over the years in the various areas you could see for yourselves where many of these are being located at the present time. For instance—and I will just quote very quickly here—in Alabama the Reynolds Company's big expansion has been in Listerhill, Alabama, where they have increased production two and one half times in the period 1957 to 1962; it is the biggest single one. Then, also for Reynolds Aluminum Company, the second biggest expansion that has taken place in the same period is in Massena, New York—on thermal energy and not on hydro energy—where they have built a brand new plant. The third one is Kaiser, and as a matter of fact it is a little bigger, at Ravenswood, West Virginia, in the coal fields there. Those are the biggest ones that have been added from 1957 to 1962 in the United States, and they are all on the thermal field.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You have figures, I presume, of the comparative costs between thermal and hydro?

Mr. WILLISTON: We have costs of thermo energy and hydro energy.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Are these particularly thermo?

Mr. WILLISTON: My engineers tell me they are bringing that thermal on at approximately four mills.

Mr. DAVIS: May I ask a supplementary question?

Is Mr. Williston saying in effect that factors other than the cost of power will be responsible for the high consumption in the near future?

MR. WILLISTON: Will you please rephrase the question?

MR. DAVIS: Are you saying in effect that the cost of power is no longer so important; that other factors will be more important in regard to location in British Columbia?

MR. WILLISTON: We tried to anticipate the questioning of the committee in this respect and the feelings of the committee so far as the effects of power were concerned. In the *Hansard* record you will see that it was very definitely stated that the fact that we allowed Columbia river development to proceed would mean the end of the aluminum business in the province of British Columbia, and we were trying to answer that official pronouncement that was placed on the pages of *Hansard*.

MR. PUGH: By whom?

MR. WILLISTON: By the leader of the New Democratic party in the House of Commons.

MR. DEACHMAN: That is not official.

MR. BONNER: It is official.

MR. BYRNE: It is official as far as he is concerned.

MR. CAMERON (*Nanaimo-Cowichan-The Islands*): We have a statement on page 35 regarding the cost of on site power at Portage Mountain. I wonder if you have some figures on the transmission costs to the Vancouver area?

MR. WILLISTON: That matter falls within the responsibility of Dr. Keenleyside and I suggest that possibly your question might be placed before the Hydro engineers. We could give you an estimate but this is within their realm and responsibility and I would think that that would be the better place to ask it.

MR. FLEMING (*Okanagan-Revelstoke*): I would like to draw attention to the financial side. On page 138 of the white paper there is a table which shows payments to be made in a lump sum, and on page 174 there are some computations showing how these lump sum payments and flood control payments will be added to over the years to get the final value of those payments. I understand the general terms and what the objective is, but to a less degree how do you propose to accomplish it? Could the minister first of all tell us, are these lump sum payments to be made, first of all, for power benefits on successive dates or for flood control benefits? Are they to be paid to British Columbia, and the hydro power authority? Are they the entities to receive this money in British Columbia?

MR. WILLISTON: The financial agent is the Minister of Finance for British Columbia and he is responsible for all fiscal arrangements pertaining to British Columbia and the Hydro Authority.

MR. FLEMING (*Okanagan-Revelstoke*): On Table 1, we find payment of the amount of \$274.8 million at October 1, 1964, with a value of \$416.1 on April 1, 1973; and then successive projects, on flood control; we find a total value of \$501.1 million in a ten year period. Is there any investment program already contemplated, or can we find out what the mechanics of the program will be in order to make this lump sum payment, or power benefit payment, or flood control payment, so that we may understand the mechanics of how the final payments will be invested to handle the size of the projects up to \$501.1. million value at the end of ten years?

MR. WILLISTON: That is a momentary statement of the position, that \$501.1 million, and of course it is on the assumption that there is construction, and that a vast sum of this money would not automatically have to be borrowed

during the period, but actually will be available, and that the sum of money you would automatically have to pay for borrowing that, at five per cent, would in fact yield these sums of money. Over and beyond that, with respect to the investment of those sums of money not required for a period of time, I can only say now that a program has already been devised, or is being devised for the investment of these sums for such period of time during which they will not actually be required to meet the schedules of the construction of the dams; and anything that we are able to earn over and above, as I indicated to you before today, the 5 per cent rate is an added profit picture. The fact that we are assured of the money for constructing dams, because it is already being discounted at $4\frac{1}{2}$ per cent; therefore we are assured of money at $4\frac{1}{2}$ per cent for the vast investment required to realize the sum of money indicated on that table, is axiomatic; it is automatically available at this rate for the simple reason that you do not have to borrow those sums of money to meet your requirement as you are proceeding.

Mr. FLEMING (*Okanagan-Revelstoke*): In the budget speech which Mr. Gordon delivered a month or so ago he drew attention to the fact that in the borrowing requirements of the government of Canada within the fiscal year there was the anticipated amount of the sum payment of \$220 million to British Columbia. May I inquire where the other \$54 million would be in that arrangement? He did not go into detail. He said that it was his understanding that the amount of the difference between the \$220 million and the \$274 million would be used to discharge the debt of the province in the United States, and at the present time the dollars earning $4\frac{1}{2}$ per cent over the period would be real savings to the province, and such savings would be credited to the development account of the Columbia river.

Mr. WILLISTON: If you read the Canada-British Columbia agreement you will find that all moneys and borrowing shall be received and invested on behalf of the Columbia River to become a credit to the Columbia River project and in fact in due course to assist in reducing the cost of power coming from the Columbia River system. That was the agreement. All our accounts, as a matter of fact, in the Canada-British Columbia agreement, are subject to the check of the federal government, and we have to account to them alone on our interest pattern.

Mr. FLEMING (*Okanagan-Revelstoke*): I realize that. In order that there might be a very firm understanding between Canada and British Columbia in meeting the time schedule, there is now in British Columbia in being or available to be brought into being a plan of investment for the sums of money in order to discharge the obligation that will be undertaken on the river.

Mr. WILLISTON: I would not go so far as to say it has all been effected, but it is being worked on. There was a period of discussion between the federal and provincial financial officers relative to payments of certain sums in the United States effectively to give us that interest rate and discharge our responsibility for that sum of money; but the actual requirements for use against construction is an indication of the fact which I stated earlier.

Mr. FLEMING (*Okanagan-Revelstoke*): I have no more questions on this subject. However I have further questions which I will hold.

Mr. PUGH: Have you had many discussions on the effect of the increased cost of the 11 per cent sales tax on building materials and production equipment? I mean within your own group in committee?

Mr. WILLISTON: That is right. We referred to that question this morning and I indicated that representation had been made, and we had made a presentation within the group to the federal authority. Both myself and Mr. Bonner as well as Dr. Keenleyside have made representations about the actual cost of this increased tax, and I cannot go further than that.

Mr. PUGH: Before construction begins the full 11 per cent will be applied on that rather than the 8 per cent at the present time. Do you have a fairly close figure of the increase of cost?

Mr. WILLISTON: The responsibility for the actual construction of projects is one which is in the realm of Dr. Keenleyside and I think he will be able to answer your question more particularly.

Mr. PUGH: You have discussed this?

Mr. WILLISTON: That is right, and he will be able to answer this question.

Mr. PUGH: Has the province of British Columbia in itself felt that they may forgo the 5 per cent sales tax, I mean the provincial 5 per cent sales tax?

Mr. WILLISTON: The Province of British Columbia has paid the 5 per cent sales tax on all structural projects which the the province does, but does not entertain the idea that it might be removed in order to meet this special situation, the tax applies on all purchases.

Mr. PUGH: There were other projects in line with the forest industry and other industries where the cost had been increased because of the 11 per cent sales tax.

Mr. WILLISTON: That is right.

Mr. PUGH: And there was a 5 per cent sales tax to be added on after the 11 per cent, that is, there would be an increase in the 11 per cent, or the 5 per cent would be an increase on the 11 per cent?

Mr. WILLISTON: It does not have to be asked as a question. It is a mere statement of fact.

Mr. PUGH: That is so.

Mr. RYAN: I wonder if this provincial 5 per cent tax applies to the movement of earth, or to the expropriation of buildings or anything like that.

Mr. WILLISTON: No, it does not apply to wages.

Mr. RYAN: It only applies to actual construction materials needed in these dams, and possibly to machinery.

Mr. WILLISTON: That is right.

Mr. MACDONALD: I have a question of Mr. Williston. The minister to whom the minister of water rights reports. On page 24 of the presentation there is reference to an expensive series of hearings such as at Revelstoke, Kaslo and so on with regard to drawing up proposals for storing water in the Arrow lakes and at Mica. I wonder if Mr. Williston could analyse for us the nature and purpose of those particular hearings?

Mr. WILLISTON: For the benefit of the committee I think I will ask the man who conducted the hearings to answer this question. I was not present. I will ask Mr. Paget to discuss the question itself and the nature of the hearings which were conducted by him in the Arrow lakes area and elsewhere.

Mr. BONNER: To what page did you refer?

Mr. MACDONALD: Page 24 of the presentation.

Mr. PAGET: Applications for licences were made by the British Columbia Power Commission at that time for storage at Mica, Duncan and Arrow lakes. A series of hearings were held, first starting with the Mica site at Revelstoke on September, 1961. Then a hearing was held with reference to Duncan applications at Kaslo on September 21, following which hearings were held on Arrow lakes applications on February 26 and February 27 at Revelstoke, and on September 29 and 30 at Nakusp; on October 23 and 24 hearings were held at Castlegar to finish off the technical representation, and on November 21 and 22 at Victoria, British Columbia.

During these hearings no restrictions were placed against the submission of briefs by organizations and persons who were not qualified as objectors under the Water Act. As each hearing was completed, I asked several times were there any further representations, and not having any further representations, the hearings were adjourned to another location.

The licences, when issued, if objected to, could have received appeal under the Water Act. In every case no appeals were made against any of the licences issued.

Mr. MACDONALD: Do I understand, Mr. Paget, that individuals or groups, even though they did not have a proprietary interest in the area to be flooded, were invited to express their points of view at these hearings in respect of the proposed flooded sites?

Mr. PAGET: The hearings were advertised before they took place and all people were invited to appear.

Mr. MACDONALD: The physical effect of the three proposed treaty projects was fully and publicly known at that time; that is, the area to be flooded and the site of the dam.

Mr. PAGET: The Power Authority cited that information in every case.

Mr. HERRIDGE: It is quite correct to say that the overwhelming body of evidence at the hearings was against the granting of this application in respect of the High Arrow dam.

Mr. PAGET: I will agree with you that I heard little favourable evidence concerning the granting of the licences. I heard a great deal of evidence concerning expropriation proceedings and values and the distress that would be caused to the vested economy of the region.

Mr. HERRIDGE: And there were objections raised on those grounds?

Mr. PAGET: Yes. A great deal of it centred on the losses to the personal economy.

Mr. HERRIDGE: By the majority of the local organizations.

Mr. PAGET: I can file with the committee the full transcript of the hearings.

Mr. HERRIDGE: I think that would be desirable.

The CHAIRMAN: Is it agreed?

Mr. KINDT: Referring back to Mr. Williston, if and when these dams are built, will there be public tenders?

Mr. WILLISTON: All projects of the British Columbia Hydro and Power Authority are by public tender. That is the only way it will be done in this regard.

Mr. KINDT: You do not anticipate there will be any discrepancy between the figures which you have estimated and the figures which will come in on your public tender?

Mr. WILLISTON: In recent years our experience has been that our estimates have been high in each case. We do not anticipate any particular difficulty in so far as these projects are concerned.

Mr. HERRIDGE: I have a supplementary question. Mr. Williston, I would like to ask one thing as a matter of curiosity. Why were not the transcripts of these hearings published in a booklet form as the federal government has done in respect of one aspect of the question? I had to pay \$250 for my copies. They asked \$500 originally. Why was that not published by the queen's printer in Victoria so that persons could avail themselves of it at a reasonable price?

Mr. WILLISTON: Any demand for copies comes through the Comptroller's office, and I will be honest with you that this representation you have made today is the first time it has been made to my knowledge. Had there been a general demand, I would think it would have been done.

Mr. HERRIDGE: Let me tell you that once I told these organizations that it cost \$250 to get a copy of the minutes, that was the end of it so far as they were concerned.

Mr. MACDONALD: Mr. Williston, earlier you were speaking in reply to a question of Mr. Cameron with regard to the effect on agriculture of the sequence IXa. I know there is a modern highway of trans-Canada standard and also a main railway line running up in that area. Have you any information with reference to the effect of sequence IXa on those?

Mr. WILLISTON: Both of them would be taken out completely.

Mr. MACDONALD: Have you any idea of the mileage and the cost of each relocation?

Mr. BYRNE: One hundred and thirty miles of railway and 50 miles of highway, I believe.

Mr. WILLISTON: I think Mr. Byrne knows the line as intimately as anyone. However, Dr. Keenleyside will have the information exactly.

Mr. MACDONALD: I suppose probably I should defer to Dr. Keenleyside questions in respect of certain other effects, for example, the effect on Lake Windermere and the tourist areas.

Mr. WILLISTON: You could do that, but it wipes out the recreational value as it exists on this lake at the present time.

Mr. MACDONALD: Has there been any cost estimate in respect of the 1964 effect of this type of development on lake Windermere.

Mr. WILLISTON: I have no idea. Just from my own knowledge of the development in the region, I know there would be a considerable increase over the original estimates which had been prepared.

Mr. BYRNE: I was interested in Mr. Paget's answer to Mr. Herridge regarding the evidence at the hearings at Nakusp, for instance, and I suppose the other places on the Arrow lakes. Did I understand you to say there was no evidence presented in these areas which would derogate from the importance of the dam itself, the High Arrow dam and the possible flooding?

Mr. PAGET: No. The evidence was very carefully pointed in one direction. There was no such evidence presented at the hearings themselves, although I had other letters and other submissions of a confidential nature. Little evidence was presented at the hearings to indicate anybody was in favour of the Arrow lakes project.

Mr. BYRNE: The evidence presented was of a nature which showed the aesthetic values to individuals and the value of the property which each individual was in possession of in the area.

Mr. PAGET: That is true, sir.

Mr. BYRNE: Would you weigh the evidence having regard to the economics in respect of the value of the storage to Canada? I suppose this is the way you arrived at the decision. You would have to know the value to British Columbia or to Canada of the dam itself.

Mr. PAGET: My position is of an administrative nature, and it is contained in the conditions of the licence which are appended to the minister's presentation.

You will note that I take some recognition of those concerns that were expressed to me. I could read to you in respect of Mica but I will turn over to the Arrow lake's license as it will be better.

- (1) The licensee shall clear the reservoir in the manner and to the extent as directed by the Comptroller after consultation with the Deputy Minister of Forests.

- (m) The licensee shall provide public access to the reservoir area as may be directed by the Comptroller.
- (n) The licensee shall make available an amount not to exceed \$5,000 per annum to the Department of Recreation and Conservation in each of the years 1962 and 1963 to conduct a study and make a report on such remedial measures as may be determined to be necessary for the protection of fisheries and wild life.
- (o) The licensee shall undertake and complete such remedial measures for the protection of fisheries and wildlife as the Comptroller may direct following receipt of the aforesaid report from the Department of Recreation and Conservation.
- (p) The licensee shall construct and operate such components of a hydro-meteorological network as may be directed by the Comptroller and shall make the information obtained available to the Comptroller as he directs.
- (q) The licensee shall operate the reservoir as may be determined by the Comptroller in consultation with any boards or entities that may be established in respect to the interests and obligations of the Governments of Canada and British Columbia.
- (r) The licensee shall provide such facilities over or through any structure for the handling of forest products and general water transport as may be directed by the Comptroller.
- (s) The licensee shall release water at such times and in such quantities as may be directed by the Comptroller for the public benefit.
- (t) The licensee shall review with the Comptroller of Water Rights prior to expropriation under the Water Act or any other Act any matter where the licensee is unable to reach agreement with the owner or owners of land affected by the works and the operation thereof as authorized under the licence.
- (u) The licensee's rights issued under this licence shall be deemed to be subsequent to any rights granted under any licences which may be issued at any time for the consumptive use of water.

Mr. HERRIDGE: Mr. Chairman, I have a supplementary question.

Is it not correct to say that the persons who appeared at these hearings object were not allowed to discuss the terms of the treaty but under the water act were permitted only to put their objections to the granting of the licence in so far as it affected their community and themselves personally.

Mr. PAGET: That is correct. I did not constitute a royal commission or forum to hear representations in respect of the treaty; I had no powers to do that. I was hearing all applications under the Waters Act.

Mr. PUGH: Mr. Chairman, I have a supplementary question. As I understand it, in actual fact your hearings or inquiries took place after the signing of the treaty and they formed no part of the decision to flood one valley as opposed to another valley.

Mr. PAGET: That is correct, sir.

Mr. PUGH: Is the British Columbia government putting forward the view that High Arrow was used rather than the Windermere valley, and was there not a similar inquiry, not a public one, held as a matter of record in respect to the various things that would happen in the Windermere valley if you used that as an area for water reserves as opposed to the High Arrow? It seems to me we are getting into something now which only took place after the treaty had been signed. Am I not correct in saying Mr. Paget, that any objection made at that time would not have had any affect on the going ahead of the High Arrow?

Mr. PAGET: Yes. I still would have had a discretionary power to refuse the application; that was within my power. But, I do not initiate applications and unless someone had made an application to flood the Windermere valley I would not have any power to initiate a hearing to find out the objections to it, or in respect of any other factors.

Mr. PUGH: Well, your inquiry there was to deliberate on the application of a water licence and under the laws of the province of British Columbia a hearing must be held. But, the decision already had been made.

Mr. PAGET: Not necessarily so. There could be reservations, and I had power to reject.

Mr. PUGH: Had you discussed any reservations whatsoever with the British Columbia cabinet or the joint group, the Canada-British Columbia policy liaison committee, prior to the signing of the treaty?

Mr. PAGET: Well, I must admit I had prior knowledge of the general outline of the negotiations of the treaty; I will not try to avoid that. But, I must also point out I was in no way a negotiator on the treaty. I will say that at no point did I discuss this matter with the cabinet or any part of the Government of British Columbia.

Mr. PUGH: But, you would be completely aware of the terms of the treaty, and that High Arrow was an integral part of that treaty?

Mr. PAGET: I was quite aware of it.

Mr. PUGH: Was not your advice asked in any way in respect of this subject and in regard to the possibilities of what disruption in the valley would mean?

Mr. PAGET: That is quite right. My advice is asked often and freely given to either government or individuals on water resource matters. I trust you do not think I am wearing too many hats when I sometimes advise on water resource development but we are the agency which investigates and reports on water to the public and to the government, and we are also the agency that licenses at a later date. But, we have had an experience in this field dating back some 60 years, and we always have attempted to function in the licensing field, as far as possible, in an unbiased way, because of our technical interest in the position of the water resource itself.

Mr. PUGH: I think that has answered my question. May I make an observation and say that no matter which hat you wear you never talk through it.

Mr. DAVIS: Mr. Chairman, I have a supplementary question. Were not these hearings in respect of water rights licences in British Columbia held in the fall of 1961?

Mr. PAGET: Yes.

Mr. DAVIS: In other words, six months or more after the treaty was signed?

Mr. PAGET: Yes.

Mr. DAVIS: And, in other words, Canada entered into an international obligation with the United States prior to it being established in British Columbia the projects could or could not go ahead. Is that correct?

Mr. WILLISTON: I will answer that question.

Let us not have inferences or anything else; that was the understanding before the negotiations even started, for the simple reason we had to have advice in respect of a series of projects upon which we could carry out definitive engineering and, therefore, that time lag had to be in there following the acceptance of a series of projects so we could carry out sufficient definitive engineering to allow a proper application to be made to the Comptroller of Water Rights, upon which he could rule. And, he cannot rule on a licence

unless sufficient preliminary detailed engineering has been done to substantiate the application which is presented. So, the licence hearing and the licensing procedure were held just as rapidly as possible following the negotiations on the treaty and the acceptance of the particular projects.

Mr. DAVIS: Would it not have been preferable to have held these hearings and then signed the treaty?

Mr. WILLISTON: Well, that was the stand of British Columbia. As we explained in some detail this morning, it was because of a situation in the United States, and a political situation to which I would say we agreed, and if we had to go back to a different administration, a Democratic administration as opposed to a Republican, and start at the beginning, we felt a great deal of time would be lost. I think we covered that point in some detail this morning.

Mr. WILLOUGHBY: Mr. Chairman, I should like for a moment to revert to the subject of diversion. We have heard a great deal about the diversion of water to the Saskatchewan river. Mr. Williston, can you tell us whether any study has been made regarding the possibility of diverting the Columbia lakes into the Okanagan-Shuswap area? Is this economically feasible?

Mr. WILLISTON: My Comptroller advises me that there has not been studies made in respect of diverting this water from the Columbia to the Okanagan, but preliminary studies have been made in respect of diverting water from the Fraser river system to the Columbia river system in the Okanagan lake, and that is a reversal of the procedure. There has been some consideration given in respect of water requirements for the Enderby and Armstrong areas.

Mr. WILLOUGHBY: Where would that water come from?

Mr. WILLISTON: It would come from Shuswap; from the Fraser river system in and around Mabel lake and Eagle river. It would not come into the Columbia system. It would come into the Columbia river system in view of the fact that the Okanagan lakes are a part of the Columbia river system.

Mr. WILLOUGHBY: Yes. I should like to be clear on this point. Is it feasible to divert this water from the upper Seymour Arm area to the Mica lake area, I shall call it, and is it economically feasible to supply water to the whole Thompson valley in this manner?

Mr. WILLISTON: My Comptroller informs me that the actual water supply for the Thompson valley and surrounding areas is adequate at the present time, but because of the low elevation of the water in relation to the area of use the actual pumping operation is not economical at the present time.

Mr. WILLOUGHBY: In view of what you have said, am I correct in presuming that the value as far as the Thompson valley is concerned depends upon low cost power being made available to pump the water from the river?

Mr. WILLISTON: That is right.

Mr. DAVIS: Mr. Williston, I think we are all interested in the general principles of this Columbia river treaty as they appear in the white paper which was tabled by the Secretary of State for External Affairs. There is an outline therein of the principles advocated by the International Joint Commission appearing at page 39 and following. As I understand it these principles were enunciated after a long series of meetings between the Canadian and United States representatives to the International Joint Commission; is that right?

Mr. WILLISTON: That is true, but before each meeting of the international group and very often after there were also meetings of the joint liaison federal-provincial committee and our technical officers which reported to the joint group, receiving confirmation or suggestion in respect of the nature of the

discussions which would take place at the next meeting. Thus we were all made part of this complete negotiation, federally, provincially and jointly.

Mr. DAVIS: And the principal signatories included the chairmen of both sections, and the chairman of the Canadian section was General A. G. L. McNaughton?

Mr. WILLISTON: That is correct.

Mr. DAVIS: So he is a signatory to this set of principles?

Mr. WILLISTON: That is true.

Mr. DAVIS: I should like to skim quickly through these principles and ask you whether they have been met in respect of the treaty in your opinion. The first one is that co-operative development, to the extent it is practicable and feasible to do so, be added in the order of the most favourable benefit-cost ratio. Do you believe that this has been observed to the extent that it is practicable to do so.

Mr. WILLISTON: That is true, and again to emphasize this to the committee, that general principle number one of the principles was best fitted in respect of the High Arrow project. This project met this requirement to the greatest degree and was the first principle adopted. These principles were used to guide discussions in respect of this treaty. They were not used as absolutes at any time.

Mr. DAVIS: General principle No. 2 advocates savings in costs to each country as compared with alternatives available. In other words, that there be savings to each country as opposed to alternative plans.

Mr. WILLISTON: That is true.

Mr. DAVIS: You think savings have accrued in Canada as a result?

Mr. WILLISTON: That is true.

Mr. DAVIS: You believe that to be the case or that savings will accrue as a result of a treaty.

General principle No. 3 states that in respect of trans-boundary projects, and I believe this is generally applicable to the Libby project, should be determined by crediting to each country such portion of the storage capacity and head potential of the project as may be mutually agreed.

Mr. WILLISTON: That general principle was not in fact embodied in the treaty discussions because the Libby project was completely outside the treaty as such in respect of downstream benefits accruing at Canadian plants. No credit was given back to the United States. Nor do we pay them for flood control on Creston Flats provided by the Libby project.

Mr. DAVIS: It seems to me this principle is wide open, is that right?

Mr. WILLISTON: Yes.

Mr. DAVIS: Mr. Williston, dealing with the power principles, number one states that downstream power benefits in one country should be determined on the basis of an assured plan of operation of the storage in the other country. Is that principle observed in this treaty?

Mr. WILLISTON: That is right.

Mr. DAVIS: Power principle No. 2 states that the power benefits attributable to an upstream storage project should be estimated in advance to the extent possible to the mutual satisfaction of the upstream and downstream countries, and should be subject to review in accordance with the agreed principles every five years. Has this been observed?

Mr. WILLISTON: That principle is reflected in the treaty. That principle is agreed to and negotiations will take place every year for the sixth succeeding

year. In other words, you are always five years ahead, so the principle has been observed.

Mr. DAVIS: Power principle No. 3 states that the storage credit position of the upstream storage should be preserved throughout the period of the agreement.

Mr. WILLISTON: That has been agreed to.

Mr. DAVIS: Power principle No. 4 states that consideration might be given in the negotiations to the adoption of arrangements that would be less dependent upon consideration of the load patterns in each country. I believe that this financial arrangement would cover that point; is that true?

Mr. PUGH: What was that observation?

Mr. DAVIS: Power principle No. 4 states that consideration might be given in the negotiations to the adoption of arrangements that would be less dependent upon consideration of the load patterns in each country. Certainly the sale agreement, as I understand it, does not depend upon the load pattern in British Columbia?

Mr. WILLISTON: My advisers indicate to me that in the present treaty this does not apply to the specific situation that is presented before us in the 30 year arrangement.

Mr. DAVIS: Power principle No. 5 states that whenever it is necessary to place a monetary value on downstream power benefits arising in one country from storage operation in the other country the value should be estimated cost to the downstream country of obtaining equivalent power from the most economical alternative source available to the country. Is this how the 3,575 mills were established?

Mr. WILLISTON: No. This provided that if a country did not meet the requirements set forth in the treaty or had to make up the requirements within the treaty itself it would adopt the alternative for making up the measure of flow at a given time except where the appropriate Canadian and United States agencies specifically agreed on some other basis of evaluation, and that is what we have done.

Mr. DAVIS: In other words that principle has been observed in the treaty. Power principle No. 6:

Each country should assume responsibility for providing that part of the facilities needed for the cooperative development that is located within its own territory.

Mr. WILLISTON: That has been done.

Mr. DAVIS: Power principle No. 7 is very general.

Now, as to flood control, the first principle on the top of page 52:

Flood control benefits should be determined on the basis of an assured plan of operation and flood control regulations agreed to in advance.

Mr. WILLISTON: Provision has been made for that.

Mr. DAVIS: Flood control principle No. 2 is that the downstream flood control benefit should be estimated in advance.

Mr. WILLISTON: This has been done.

Mr. DAVIS:

Flood control principle No. 3: The monetary value of the flood control benefit to be assigned to the upstream storage should be the estimated average annual value of the flood damage prevented by such storage.

Mr. WILLISTON: That is right. That was the basis upon which the value was determined.

Mr. DAVIS:

Flood control principle No. 4: The upstream country should be paid one-half of the benefits as measured in flood control principle No. 3, i.e., one-half of the value of the damages prevented.

Mr. WILLISTON: That was done.

Mr. DAVIS:

Flood control principle No. 5: The amount due to the upstream country under the foregoing principles should be determined in advance of construction of each storage project. Payments to cover the entire period that the arrangements are to be effective should be made in cash as a lump sum or as periodic amounts as may be agreed upon to the mutual satisfaction of the upstream and downstream countries.

Mr. WILLISTON: That is part of the attachments to the treaty and made a part thereto.

Mr. DAVIS: Flood control principle No. 6:

In the event of the downstream country requesting special operation for flood control of storage included in the assured plan of operation, beyond the type of operation provided for in such assured plan, the upstream country should be compensated for any loss of power which may result therefrom.

Mr. WILLISTON: Provision has been made to honour that commitment.

Mr. DAVIS: In other words, in your opinion all of the principles which were thoroughly discussed and in a sense negotiated between the relevant parties have been observed in the treaty as it presently stands.

Mr. WILLISTON: I would think the treaty in essence observes the principles which were enunciated in the International Joint Commission submission.

Mr. PUGH: I take it that these principles were before all the members of the Canada-British Columbia policy liaison committee up until the signing of the original treaty.

Mr. WILLISTON: The policy liaison committee played an important part in drawing up and in actually approving the wording of the principles as they finally appear.

Mr. PUGH: And you adhered to those principles in all the discussions and negotiations between Canada and the United States leading up to the treaty?

Mr. WILLISTON: As I indicated, the United States did not accept these principles as binding them; they accepted them as guide lines. They did not accept them as binding instruments as far as the treaty negotiations were concerned, nor were the Canadian negotiators placed in the position of regarding these principles as absolute. They were used as guide lines by Mr. Fulton, Mr. Robertson, Mr. Ritchie and Mr. Bassett.

Mr. PUGH: When you answered questions by Mr. Davis you stated that these principles were before you but that they had been adhered to and that they do actually appear in the treaty, not the set-out principles but the results.

Might I ask a short question concerning the liaison committee, Mr. Chairman?

The CHAIRMAN: I have a list of questionners.

Mr. PUGH: This is fairly short. There has been considerable discussion

on it. I take it, first of all, that you worked very well together on that committee. I understand that when the International Joint Commission was meeting, you met before and after. My question is as follows: Did you have a secretary and did you keep minutes of your discussions?

Mr. WILLISTON: We did not keep verbatim records but we did keep a general transcript of the proceedings.

Mr. PUGH: I take it that any correspondence between members, and so on, would form part of that transcript or part of your minutes?

Mr. WILLISTON: The minutes and the information were regarded as confidential information on both sides to serve as a guide on what had occurred before. Quite frankly I cannot remember any correspondence being submitted. The minutes were a summary account of the proceedings.

Mr. PUGH: Were the records of the discussions gone through at the next meeting or were they approved at the conclusion of each meeting?

Mr. WILLISTON: At subsequent meetings, as I recall, they may have been approved at the same meeting in some instances but in general the group from British Columbia and the federal team would peruse the summary account and generally approve the summation as recording what had taken place. However, we never formally moved, seconded or accepted them in an official manner.

Mr. PUGH: This summary account forms the basis of all the records of discussions which took place in that committee, I understand. Have you gone through the summations since?

Mr. WILLISTON: I have gone through parts and sections of it because it is part of my record.

Mr. PUGH: You went through them as they might affect your department and so on. Did you at any time have any cause for objection to wording in that summation?

Mr. WILLISTON: Since we never approved the wording, we considered it as a general account and it was accepted by both sides. We never at any time debated the exact wording. It was purely informative for the people who were there, and it was in general a record of the principles which had been adopted at a given time. The summary was made so that we would not become repetitious and so that we would know what occurred before.

Mr. PUGH: As a result of going over this part of the record which came to your department, did you take up any question which you thought was not quite right as it was set up in that record? Did you take it up with any members of the Canada-British Columbia policy liaison committee?

Mr. WILLISTON: Some of the drafters are present here. We prepared a preliminary draft, objections were discussed and the drafters on both sides either incorporated our objections or deleted the matter to which we had taken exception and thus arrived at an account. May I emphasize that the final account was not an account which was moved, seconded and made an immovable record for all time; it was used as an assist to both sides.

Mr. DEACHMAN: Mr. Williston, this morning we touched slightly on the question of when you hope to go to contract, and the answer you gave at that time was "some time in the month of October in respect of some of the projects". If we turn to page 179 of the white paper we see that the terminations of these projects, or, as they put it "the in-service date" are: April 1, 1968 for the Duncan storage; April 1, 1969 for the Arrow storage and April 1973 for the Mica storage. Therefore, the termination dates or the in-service dates for the whole project are something like a decade hence. If we look

over to the next column we see the total expenditure, including the interest charges, is going to be in the order of \$448 million, getting on towards half a billion dollars, and a decade of construction. The question I want to ask and the line of questioning I want to pursue for a moment is this: British Columbia is now being ushered into a decade of construction of the order of half a billion dollars. You must have done some economic studies as to just what impact that will have on the province of British Columbia. I wonder whether you can give us any ideas as to what studies you have done and what the effects will be. I have in mind the amount of employment that will be required.

I would like to hear something about your plans regarding spreading employment over the winter time; its effect, for instance, on industry in the lower mainland; how you expect to absorb the unemployment which will ensue as people come off jobs; and so on. The economic effects will be large, and you must have made studies.

Mr. WILLISTON: You may be able to secure some detailed information concerning employment and numbers of people at various times when Dr. Keenleyside is on the stand, but the Department of Industrial Development, Trade and Commerce, has also undertaken some general studies in this regard. I do not know whether my colleague is in a position to discuss this kind of information in detail, but he may care to make some general comments.

Mr. BONNER: Mr. Chairman, Mr. Deachman properly observes that we are going into an investment of approximately a half billion dollars on the Columbia treaty projects. That is a very substantial amount of money and it represents a great deal of employment which Dr. Keenleyside, I know, is prepared to treat more fully.

However, I would like to place that sum in perspective. The province in any given year sees invested something in the order of \$1,400 million to \$1,500 million; and although this is a very substantial sum it has to be viewed in the perspective of a very large investment program which is already under way and represents a very generous addition to it as a continuing feature.

The problem of the period in terms of projected population is to see about 20,000 jobs a year created in the province, in the course of which the provincial population—which is now in the order of 1,700,000 people—should compound at approximately 3 per cent through the balance of this decade. In the general economic analysis of the province's economic growth, we are projecting to a population figure of about 2,100,000 by 1969-70, and it is within this general frame of reference that this project and others have to be taken into account.

The positive effects of this program, together with the Peace River project, lie not only in the direct employment which is furnished but also in the guarantee which is provided by these two projects, and our ability to furnish power at low cost to industries which are coming into the province in any event.

If we were not in a position to furnish large-scale, low-cost power we would unquestionably be in difficulty because our current rate of power demand doubles approximately every eight to eight and one-half years. I know that these are questions which will excite more detailed inquiries of Dr. Keenleyside, but it is within this general frame of reference that we have approached the question.

Our studies, while not formal at this moment, are predicated on observations which were prepared with some formality for the commission on Canada's economic prospects in 1955. We have found that the projections made at the

time have not been in any degree in error. Some of the targets anticipated for the 1975 period are well in advance of achievement even at this date.

We have had occasion in recent years to bring these projections up to date, with the result that we have had enough experience in regard to the studies of 1955 to feel confident that our basic projections within this period are sound and not likely to be interrupted in any serious detail.

Mr. DEACHMAN: These new blocks of power will attract industry to the province. Can you give us specific instances of industries which will come to the province as a result? Are you in possession of that information now?

Mr. BONNER: Either Mr. Williston or I could refer to the pulp and paper projects which are occurring in the Fort George area right now. Those are projects which could not have been contemplated to settle properly without the Peace River power. If we had not that project in mind, I am sure those industries would not be looking so seriously into that region at this time.

It is obvious with a capital program of the order which I have indicated—and which shows every evidence of increasing—that, although it is difficult to show in detail, one cannot imagine it to be turned off by anything short of a national calamity.

Mr. WILLISTON: May I expand? I am leaving these hearings to go to Prince Rupert on Sunday in order to start hearings on Monday on applications by major pulp mills—the greatest expansion in pulp mill activity anywhere in the world at the present time. Each one of those mills is in some way associated with the power which is coming from the Peace River project. It has already brought in the chemical industry, Hookers, to service those areas. Certain mines—in fact three lots of mines—such as Endako, and the Poss Mountain molybdenum mine in the Cariboo, are all phasing themselves into production because of the power available through this one project.

Mr. DEACHMAN: This expansion is a capital expansion and very heavily based on construction workers, yet at the same time it is going to attract population, and so on. What is the trend towards secondary manufacturing and light manufacturing? What is the province doing to absorb that kind of unemployment?

Mr. BONNER: Our problem is not one of absorbing unemployment.

Mr. DEACHMAN: I should have said employment.

Mr. BONNER: The way in which I approach the question, Mr. Chairman, is this: five years ago it would have been difficult to convince anyone of the development which is occurring this year, yet the period from five years ago to the present time has been one of continuous growth and expansion in the provincial economy. As I said in answer to a previous question, it is not to be anticipated, short of a national calamity, that this type of development will cease or turn down. Consequently, we are projecting on a reasonable continuation of this situation.

The counterpart of the problem which you anticipate occurred following 1957 when the country went into something of a recession. It had its effect in British Columbia too. Notwithstanding that a certain number of construction workers were no longer in a period of vigorous construction work which characterized the period of 1955 to 1957, they were nevertheless, for the most part, absorbed in the continuing impetus of the economy from 1957 to about 1961 when the capital program once again took an upward turn. This year we are on the 1957 plateau. The investment in the province in 1957 was approximately \$1,595 million. This year it is projected by federal figures in the order of \$1,540 million. So we are for all practical purposes back to the 1957 level; and taking the projection of the province over the post-war period, the upward trend of the graph is between 25 and 30 per cent, as a lengthy

projection. It is to be anticipated by the population growth characteristic of North America that this is going to be interpreted both north and south of the 59th parallel, because the population explosion is a most important factor facing industry and government. We use it in education and in the need to extend health programs and all the rest. This is the general experience upon which our projections have been so far based.

Mr. DEACHMAN: I have one more question to put this project into perspective with other projects which have taken place in the province. How does this appear in size and cost, and its impact on the economy when compared to that at Kitimat, the building of the P.G.E. and the Peace river project and so on?

Mr. BONNER: Let me put it this way: in the same period of time between now and the construction and completion of the treaty projects, we should spend possibly twice as much on highways.

Mr. DEACHMAN: You say twice as much?

Mr. BONNER: On provincial highways. In the decade hence we shall spend at the present rate about \$1 billion over the same period of time, and we will be spending half that amount on the treaty projects.

Mr. GROOS: I have a question supplementary to that of Mr. Deachman's. Getting back to the matter of employment which is something which interests everyone in British Columbia, I am interested to know what safeguards the provincial government intends to write into the contracts for this great development program in order to ensure that a fair measure of employment will go to Canadians and that we will not have some very temporary residents for this construction?

Mr. WILLISTON: Dr. Keenleyside is prepared to discuss the matter of labour, labour agreements, and anything of that nature when he is on the stand, since it is his particular responsibility. He is in a position to discuss it.

Mr. GROOS: This will be a contract involvement of the provincial government in its power entity.

Mr. WILLISTON: That is right, because it is part of the Canada-British Columbia agreement as well, and that part has been, in terms, passed on to the employment authority of British Columbia and the Hydro Authority.

Mr. HERRIDGE: I want to refer back to a subject raised earlier when I could not catch your eye, and that is the question of basin clearings. This is a matter of great concern to the British Columbia Fishing Confederation, the West Kootenay Rod and Gun Club, and the Interior Rod and Gun Club and I have been asked by a number of them to raise the question at these hearings. They are not satisfied to date with the answers given with respect to that clearing. The West Kootenay Rod and Gun Club spent \$500 to prepare a brief which was presented at the first hearing at Castlegar which was based on the practices followed by the Tennessee Valley Authority, and a dozen other developments in the United States and at other places in Canada, and which received commendation generally.

Now with respect to reservoir clearance, the brief has this to say, "all vegetation must be cleared so there is no foliage up to ten feet of elevation." I emphasize this because it is printed in black type. "This is an absolute necessity if use is to be made of the reservoir for any of the purposes mentioned in this brief other than for water storage and power generation."

The brief deals with the great value of caring for recreation facilities, beaches, and other things of that sort. Now, Mr. Chairman, this question has been raised repeatedly and we cannot understand why there have not been definite detailed answers given to this question. Mr. Williston, I would like to ask you this question: I am sure when we mention the clearing of vegetation

that you mean cutting the stumps down to ground level and clearing of all vegetation. What is the intention at the present time with respect to the Arrow lakes reservoir?

Mr. WILLISTON: I have already described it, and I have indicated to you that the information and knowledge in this field is presently in a state of flux. You refer to the Tennessee Valley Authority, but if you will refer to reservoir clearing in the United States to the south of us, you will find that in the recommendations now coming forward they did the job too thoroughly in the past and that in completely removing all vegetation they left no means by which fish life, recreational fish life, could in fact subsist, because there were no hiding places for fish to escape from their predators, in that type of recommendation. It was good procedure at the time, but it is no longer subscribed to, and the fact of the matter happens to be that I was trying to discuss the general policy line in which we were moving in this regard. An following that, for fish life we could take you and anyone here to wonderful fishing; if you want some of the best fishing in the world, certainly you can find it today in the province of British Columbia.

Mr. BYRNE: Do not tell too much!

Mr. WILLISTON: We could take you up to the reservoir area at Duncan, or, taking your question, the reservoir area behind the Alcan dam on the Nechako which was never cleared where you would get the best fishing areas that we have throughout the whole region, with people coming in there to enjoy the fishing which is important in that regard.

Mr. NESBITT: What sort of fish?

Mr. WILLISTON: It is mostly all trout, rainbow trout. There are no salmon up there. The fact is that there are areas for recreational use where actual clearing will be done, but there are other areas which will be cut flush, as we have indicated. But we have learned something from actual use. We spent \$9 million in clearing Buttle Lake, and we cut all the trees down to the shoreline, but subsequent wave action has taken place which has forced the earth away from the stumps, and the stumps are again superimposed to act as a barrier now just as the situation was previously. We do not profess to know all the answers, but we do profess and guarantee a continuing program to maintain recreational amenities. I could give you the details of all these things when we agreed to a continuing program. It is just a mass of details, in outlining the different requests which you have made.

Mr. HERRIDGE: What are you going to do with the Duncan lake area? They are very concerned about it.

Mr. WILLISTON: We are going to remove all the merchantable trees. We are going to take down this tree growth in the area and as I indicated this morning they have an actual sweeping programme to continue. A final sweeping of the area will be something which will likely be carried out over a number of years because it is the most economic and best way to collect the final debris into pockets.

Mr. HERRIDGE: When you say you mean to remove the tree growth, do you mean cutting all the forest growth?

Mr. WILLISTON: That means cutting down the tree growth.

Mr. HERRIDGE: And removing them?

Mr. WILLISTON: All the merchantable values will be moved out, and as I have already indicated twice, a sweeping operation will be continued over a period of time.

Mr. HERRIDGE: I have another question which is a matter of concern. I was at a meeting in Nelson in February, and as a result the Nelson *Daily News* wired you with respect to the discussion.

Mr. WILLISTON: That is right.

Mr. HERRIDGE: And you replied to the *Nelson Daily News* on February 7 as follows:

Clearing on reservoir projects will either retain or improve recreational amenities. All trees and snags will be felled and removed so that navigation will not be impeded.

Do you believe that leaving the snags and other things consequent to the destruction of beaches, and so on, will retain or improve the recreational amenities.

Mr. WILLISTON: Those are your words, not mine. I said they would be removed in two ways. The merchantables would be trucked out. Getting back to the amount of the debris, this would be swept. I said exactly what I said in that telegram here in the committee.

Mr. HERRIDGE: What do you intend to do behind Mica?

Mr. WILLISTON: Exactly the same.

Mr. HERRIDGE: Will there be timber left behind Mica?

Mr. WILLISTON: No. As a matter of fact we have been harvesting the timber behind Mica now for ten years and are starting on the second phase. We have had all the merchantable timber sold. We are still getting applications, for the 1970's, and within the last few days I have even had applications for all the pulp and small material in the Mica reservoir as well. That area will be logged and all the material will be sold and used.

Mr. HERRIDGE: Will none of the merchantable timber be left standing behind the Mica reservoir?

Mr. WILLISTON: No.

Mr. HERRIDGE: All the timber will be slashed and removed?

Mr. WILLISTON: Let me preface that. As I have indicated in the wire all standing timber that can in any way become a hindrance recreational in the area will be felled. There are areas in the Mica situation that are going to be continuously under about 500 feet of water.

Mr. HERRIDGE: How can you say you will retain or improve the recreational amenities when you will leave timber on beautiful beaches, and so on, in the Duncan lake area?

Mr. GROOS: Five hundred feet down,

Mr. HERRIDGE: No.

Mr. WILLISTON: I will stay with the actual statement which has been made to the committee and the undertaking made in so far as recreational values are concerned.

Mr. HERRIDGE: I have one other question; this is rather intriguing. I have a Canadian press statement of February 28. Mr. Williston said:

Actual costs of the dam and calculations for the sale of downstream benefits were worked out on U.S. computers.

They knew more about the situation than we did—they have been working on the Columbia for 20 years. You can't leak figures to engineers of the stature of the U.S. team.

Williston said Davis never was a party to the negotiations and was not involved officially in any way.

Were all the calculations worked out on United States computers, and is it true that Mr. Davis was never a party to the negotiations?

Mr. WILLISTON: On point one, the calculations to which we were making reference, and the direct reference there to which I was referring on which we

were working were all done on the United States computers; that is true. I know some of you felt that our engineers did not have the ability, but the fact is that the computation we were carrying out at that time was done in respect of the downstream power benefits on the United States system, and that was predicated on the growth factor in the United States.

Our figures were explicit at that time. We did not sell our dam sites to the United States, or anything else. All we were selling were our downstream benefits, and that was what we were acquiring a value for. We had to use the United States figures in respect of their load growth because it was their load growth. They had the actual figures, we did not. We had to upgrade the figures they had. Our engineers and their engineers used the information and put it through their computer. They came up with two lines of thought; one based upon their estimate and their figures, and one based upon our engineers' estimate and use of the figures. Their calculation was more substantial than ours because it was based on fact and ours was based on estimates in an effort to get the best deal possible for British Columbia. As you recall, we could not resolve those two lines and figures, and one of the best things which came out of the protocol was that that line of doubt was resolved between the two countries. That is what I made reference to. I back up from it not one iota. We were trying to estimate what their load growth would be in the United States, because it was the rate at which it grew which would determine the size of downstream benefits in the future. If we are to be ridiculed for that, I do not mind. It was a fact of life, and our engineers with the United States' engineers worked through about \$60,000 of computer time to work out our estimate of what their figures appeared to mean, which I think is going a long way.

Mr. DEACHMAN: I have a supplementary question. Did you have any reason to believe that those computers were fixed in favour of the house, like the computer at Las Vegas.

The CHAIRMAN: Mr. Herridge, have you finished?

Mr. HERRIDGE: I just have the question about Mr. Davis. One of the cabinet ministers at one time told me Mr. Davis was in on all of the negotiations. This is disturbing because I consider Mr. Davis to be an honest man.

Mr. WILLISTON: The man who spoke in respect of the negotiations and who was making the negotiation with myself was the Hon. Paul Martin; he was the man with whom I negotiated. The men with whom the Hon. Paul Martin consulted in arriving at his decision were the responsibility of Mr. Martin and not mine. I took certain men with me and Mr. Martin took certain men with him; but Mr. Martin was the man who acted for the federal government and I had to accept responsibility for the provincial government.

Mr. HERRIDGE: Was Mr. Davis present?

Mr. WILLISTON: Yes.

Mr. HERRIDGE: At the negotiation?

Mr. WILLISTON: What negotiation?

Mr. HERRIDGE: With regard to the treaty and protocols?

Mr. WILLISTON: No—at some of them, yes.

Mr. DAVIS: I think the fact is that I was at all negotiations on the protocol and all the meetings between British Columbia and Ottawa.

Mr. BREWIN: Mr. Chairman, when do we come back again?

The CHAIRMAN: Gentlemen, it is just six o'clock. I have on my list Mr. Minsdale and Mr. Groos. Our plan had been to hear Dr. Keenleyside tomorrow at nine o'clock sharp. If it is the pleasure of the committee to meet tonight that could be done.

Mr. GROOS: You can cross me off.

Mr. HERRIDGE: There are other questions to be asked of Mr. Williston. I hardly think it is fair to the secretary of the committee to load her with work like this.

Mr. BREWIN: Mr. Chairman, I have a few questions which I would like to direct to Mr. Bonner and I was wondering at what stage he would be available to answer my questions.

My questions will involve legal matters and I think it would be more suitable to direct these to Mr. Bonner.

Mr. RYAN: Mr. Chairman, I move we sit tonight.

The CHAIRMAN: At what time?

Mr. RYAN: Eight o'clock.

The CHAIRMAN: Would that suggestion be acceptable to the members of the committee? Would all those in favour indicate.

Mr. NESBITT: It may be interesting to know how long Mr. Williston, Mr. Bonner and the other British Columbia officials intend to remain here in Ottawa and what plans they have made in respect of returning home. It is not our wish to inconvenience these officials.

Mr. WILLISTON: Mr. Chairman, I am willing to sit tonight. Quite frankly, you have the whole of the operational staff of Water Rights before you. We are away from our province and we would like to keep going in order that some of our officials may be able to get back.

Mr. RYAN: There may be a fire.

Mr. WILLISTON: I am quite willing to sit tonight, if that is your wish. In due course we will have to leave to return but we are willing to meet your demands.

Mr. LEBOE: Mr. Chairman, I think it is a good idea to sit tonight.

The CHAIRMAN: Is it agreeable that we sit tonight at 8 o'clock?

Some hon. MEMBERS: Agreed.

TUESDAY, April 14, 1964

EVENING SESSION

The CHAIRMAN: Gentlemen, I see a quorum. May I present the fourth report of the subcommittee on agenda and procedure for the standing committee on external affairs. This report is as follows:

That Dr. Hugh Q. Golder, Toronto, and Dr. Arthur Casagrande, Professor of Geology, Harvard University, be invited to appear before the committee on April 24 and April 28 respectively. (The committee has been informed that expenses incurred by their attendance be borne by the British Columbia Hydro and Power Authority.)

That G. E. Crippen and Associates, Limited Vancouver, be invited to attend before the committee on April 24, and reimbursed as ordered by the committee for professional and/or expert witnesses on March 25, 1964.

Could I have a motion to adopt this report?

Mr. HERRIDGE: Mr. Chairman, the committee did not agree to pay the expenses of these United States experts.

Mr. BYRNE: That situation is covered by the report.

The CHAIRMAN: I think the wording of the report is clear in that regard. Mr. Herridge.

Mr. HERRIDGE: I must have misheard you, I am sorry.

The CHAIRMAN: Perhaps I should read that wording again. The report states that the expenses incurred by their attendance, and that refers to the professor of geology, Harvard and Dr. Hugh Golder of Toronto be borne by the British Columbia Hydro and Power Authority. May I have a motion of acceptance?

Mr. DAVIS: Mr. Chairman, perhaps you would indicate the area of expertise of the witnesses?

Mr. DEACHMAN: That is exactly what I was interested in, Mr. Chairman.

The CHAIRMAN: I must confess that that is not something in respect of which I have personal knowledge. It was the suggestion of Dr. Hugh Keenleyside to call these witnesses who are expert in those subject areas within his knowledge.

I am informed by the hon. Mr. Williston that both these gentlemen are experts in respect of soils and dam construction.

Could I have a motion of acceptance?

Mr. STEWART: Before we have a motion to that effect I think perhaps it should be stated that it is a rather peculiar situation for this committee to resolve that the burden of expenses in respect of witnesses should fall upon any individual or body. I do not object to any informal arrangement that may exist but it seems to me a little beyond our scope of authority in making such a decision.

The CHAIRMAN: This was a suggestion put to the steering committee, as I understand it, on behalf of Dr. Keenleyside who is the witness to be called tomorrow. There was a general feeling that the evidence given by these witnesses would be of help to this committee, and this was an arrangement which was apparently agreeable to all.

Mr. STEWART: I understand that situation but I think we ought to proceed in an orderly fashion. I do not think we are doing so by deciding that some individual is going to accept the expenses of calling certain witnesses.

Mr. FLEMING (*Okanagan-Revelstoke*): Mr. Chairman, the person or organization that is going to pay the expenses of these witnesses is the British Columbia Hydro and Power Authority which is the entity mentioned in these negotiations. These witnesses are supplementary to the presentation made by that authority. Consequently I do not see any reason why they should not assist in financing the attendance of these witnesses before this committee.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, in respect of Mr. Stewart's objection I should like to say I understood your statement to be presented merely as information that the expenses were going to be borne by the British Columbia Hydro and Power Authority.

Mr. BYRNE: I think that is exactly the way we should accept that report.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I understood this information was being presented to us so that we should not feel the committee was being asked to pay these expenses.

The CHAIRMAN: That was exactly my understanding. Perhaps the wording of the report is not as clear as it may have been. However, now that it has been cleared up I will entertain a motion of acceptance.

Mr. HERRIDGE: I think perhaps we should include the words: "—according to our information these expenses will be paid by the British Columbia Hydro and Power Authority".

The CHAIRMAN: Subject to Mr. Herridge's correction, could I have a motion of acceptance? Would you so move, Mr. Herridge?

Mr. HERRIDGE: Yes.

Mr. LEBOE: Mr. Chairman, have we now one or two motions before us? I think we should have a clear understanding in this regard before we vote, because if this report has been presented to us on the basis of providing information we then should have a motion in respect of expenses to be paid by the committee in accordance with, as I understand, a motion which has already been passed.

The CHAIRMAN: The actual form of the recommendation brought forward by the steering committee providing for payment to witnesses is contained in a recommendation of the committee as a whole. If the members of this committee feel this report should be changed in any way I am happy to hold it in abeyance until a later stage of this meeting.

Mr. LEBOE: Mr. Chairman, I should like to point out that the expenses of some witnesses to be called before this committee are to be paid as a result of a motion passed by this committee.

The CHAIRMAN: That is true.

Mr. LEBOE: In order to resolve this difficulty, I think we should have two motions. We should consider one motion to adopt the report as information and a second motion in respect of the commitment made by this committee to pay certain expenses.

Mr. BYRNE: Mr. Chairman, surely we are not going to spend one half an hour deciding this question. The question is purely an academic one in any event.

The CHAIRMAN: Would you second this motion, Mr. Byrne?

Mr. BYRNE: Yes, Mr. Chairman, I second the motion and suggest that it be reworded and presented to this committee at a later time this date.

The CHAIRMAN: Is everyone in favour of that suggestion.

Some hon. MEMBERS: Agreed.

The CHAIRMAN: Before we commence, Mr. Herridge has indicated that he wishes to make one or two remarks.

Mr. HERRIDGE: Mr. Chairman, I should like to make a remark in respect of a point of privilege. I am sorry to interrupt the normal proceedings of this committee, but I feel it necessary to refer to an article appearing in the *Vancouver Province* of April 11, Saturday, 1964, which has been sent to me from British Columbia under the byline of Paddy Sherman. Mr. Sherman has reported as follows:

If High Arrow dam on the Columbia could be taken down after 100 years, the permanent loss of flooded farm land would be avoided, Bert Herridge (NDP, Kootenay West) suggested Friday.

In the meantime, he told the external affairs committee, residents could farm higher up the mountainside. When the dam was taken down, he said, they could farm the alluvial soil left by the flood waters.

Herridge told the Columbia river treaty hearing the idea came from an agricultural expert. He asked hydro engineer Gordon Macnabb if the dam could be taken down.

Macnabb said it would be easier to open the gates and let the water out.

Mr. Chairman, I was quoting from a statement made by one of the soil experts of the government of British Columbia, and I was ridiculing that statement as being completely nonsensical. However, I wanted to ask a question in respect of this statement.

Mr. FLEMING (*Okanagan-Revelstoke*): I thought you were being serious at the time. How can we tell whether you are ridiculing or not?

Mr. HERRIDGE: Mr. Chairman, I will give Mr. Sherman the benefit of the doubt although he has misquoted me on a number of occasions. As I remember he was sitting at the rear of the hall and possibly did not hear me accurately.

The CHAIRMAN: Thank you, Mr. Herridge, for that explanation.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I should like to ask a question concerning the answer to Mr. Davis' question about their particular field of expertise. Was it answered?

Mr. DAVIS: These are soil experts; that was my understanding.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You did get the answer to it?

The CHAIRMAN: The explanation I received from the Hon. Mr. Williston is to the effect that these are soil experts and experts in the foundations for dams.

The first person on my list is Mr. Dinsdale.

Mr. DINSDALE: Mr. Chairman, I have one brief question to put. It arises from a sentence in the last paragraph on page 18 of the brief. I am asking the question so as to clear up any misunderstanding that might remain in respect of the points of agreement that were reached at the time the treaty was signed. It says here:

The treaty had been negotiated on the assumption that the power benefits would be returned to Canada.

That is the particular phrase in which I am interested. I presume, Mr. Williston, that this was the assumption that was taken by the negotiating committee and the Canadian negotiating team.

Mr. WILLISTON: With the proviso that sale would be allowed in the United States.

Mr. DINSDALE: But the question of the Peace development did not arise until after the agreement was reached on the treaty itself.

Mr. WILLISTON: With respect, this decision on downstream benefits had absolutely nothing to do with the Peace river development. To be exact and to put the record straight in so far as this was concerned, I will say that the point of sale of downstream benefits in the United States was argued very vigorously by British Columbia, and the inclusion of the article allowing such sale was strongly supported by my colleague throughout those negotiations.

There has been a lot of conjecture about this point. When I returned to the Government of the Province of British Columbia with my report and indicated at that time that an arrangement had been made for the co-operative development of the Columbia river and for the province of British Columbia to receive half the downstream benefits that would be available, I was immediately challenged on how I was going to handle those benefits in such a way as to meet the costs which would be incurred in British Columbia for the construction of the project. I indicated that that would be quite easy;—and I have said this publicly before—that part of the sale would be in the United States and part of it would be returned for use in the province of British Columbia. I was told forthwith and along with others to find out the basis upon which a negotiation of that sale could be made. Preliminary talks were undertaken. As you know, Mr. Dinsdale, at that time there was a very severe restriction on the time limit for the sale of downstream benefit energy. We could not get a policy statement covering any length of time. When we went to negotiate, we found that on any short

term basis the sale of even surplus energy in the United States would have to be governed by the provision covering the sale of their own surplus, secondary, or dump energy which averaged at the time up to the Bonneville administration about two mills per kilowatt hour.

When we reported back to British Columbia we said that the cost to us of the power for the construction of the project would be about four mills; that we had to receive approximately four mills from each kilowatt merely to pay the incurred cost of construction. It was pointed out very forcibly to me that if we sold even a portion of the power in the United States for two mills we would have to sell a similar amount in British Columbia for six mills to average the four mill cost.

Regardless of how you viewed such an arrangement, the fact of selling power to the United States people for two mills and picking up the difference which you would lose from your own Canadian customers made the whole situation most unattractive. That led in the first instance to a change of position in British Columbia because both the cost of transmission for a given period of time, the cost of transmission standby power at \$2 million a year, plus the unfavourable sales arrangement which was open to us, opened up a completely unacceptable set of circumstances in so far as our province was concerned. It was at that time that we started preliminary discussions with the United States people as to the basis on which we could sell this power to them which was available to us.

It was then we found out that given a fair contracted period, certainly 20 years at least on a firm basis, we could expect a fair return for the power which we sold. That is the time when we adopted such a position because economically we had to make each kilowatt return four mills or better or else we were losing money in the initial arrangement into which we were entering.

It is perfectly true that when we came back we did not anticipate the problem which developed, but upon investigation we found that the only adequate manner in which to handle the downstream benefits and get their return to British Columbia and invest that return into the Columbia project to ensure the long term generation of cheap electricity for British Columbians, was to take the best return possible from the downstream benefit energy.

That is a long explanation but it has been twisted in the subsequent months. However, that was the general series of discussions and moves which took place in relation to the downstream benefit energy thinking after the treaty was signed.

Mr. DINSDALE: That was the question I was going to ask. This was after the treaty was signed? Up to the signing of the treaty, as this phrase indicates, it was assumed that the bulk of the power would be returned to Canada, and this assumption was based on the information that was available at the time.

Mr. WILLISTON: It was the basis of the information that was available. It was only when we came to plan the exact transmission and to find that the transmission grid which we built would serve only a limited amount of power and it was impossible to amortize a grid as arranged in any proper grid pattern in the province of British Columbia, that we really got down to the engineering. The only practical solution became the sale of that power in the United States where it was generated at a profit with the investment of all the returns into the Columbia river project.

Mr. DAVIS: I have a supplementary question. Mr. Williston, I have the impression that at the date of the signing of the treaty there had not, as of that time at least, been a thorough examination of the other major power alternatives available to the province of British Columbia; certainly there had not been any examination of the Peace river project. I understand that one of the studies, the study by the British Columbia energy board, was initiated only about the time

of the signing of the treaty—the one that compares the Columbia power project, for example.

Mr. WILLISTON: It is true that analyses were initiated at that time and the reference was made to the Energy Board at that time to properly provide a basis for comparison between the power from the two projects. However, it is not true to say that an initial investigation had not taken place on the Peace river power up until that time.

It is true to say that no public investigation had been made until that time of the cost of that power available to the government.

Mr. BREWIN: Mr. Chairman, I would like to direct some questions to Mr. Bonner about a legal matter, or a partly legal matter, that is disturbing me. I think Mr. Bonner can best deal with it.

As I understand it, the entity that is responsible for administering this whole project will be the British Columbia Hydro and Power Authority. Am I right in that?

Mr. BONNER: Yes, that is correct.

Mr. BREWIN: I have been furnished with a copy of a recent statute establishing this authority. I presume it existed in some other form earlier than this. There are some provisions in it which I find rather unusual and rather disturbing.

I refer, Mr. Bonner, to section 53 of this statute:

Notwithstanding any specific provision in any act to the contrary, except as otherwise provided by or under this act, the authority is not bound by any statute or statutory provision of the province.

When I look at further sections I note that the authority is to be considered an employer under the workmen's compensation act. There are some provisions about attachments of debts. There is a provision that the lieutenant governor in council may make a statute applicable. There is a provision that the labour relations act will apply to the authority.

I am not as familiar as you, sir, with the legislation in British Columbia, but I have looked through some of it. It would appear that the minimum wage clause, hours of work statute, annual holidays, equal pay statutes and the fair employment practices act would not apply, that the Trade Unions Act would not apply and that no municipal bylaw would apply. It would appear also that the highway traffic act probably would not apply. Have I the right conception of this when I say that this authority, by this section, is more or less placed above the ordinary laws of the province?

Mr. BONNER: If that is your conclusion it is certainly not correct.

Mr. BREWIN: Will you then explain it to me because that is the way in which it appears to be to me.

Mr. BONNER: With reference to the labour relations act, for example, the Hydro Authority has had long and harmonious experience in organized labour relationships. You may care to question Dr. Keenleyside more fully on this when he takes the stand because he is the chairman of the authority. The relationships in those respects are memorialized by agreements of many years' standing; and these, of course, are not affected.

The problem of the applicability of a statute is one which we anticipate will undergo a certain amount of transition with expansion of the hydro development. You were thoughtful to point out the device which is available within the statute to make certain statutes specifically applicable to the authority by the intermediate device of order in council. It is to ensure that this type of applicability may be furnished as required that that provision has been inserted into the statute.

Mr. BREWIN: But, Mr. Bonner, you have not answered my question. Perhaps I did not make myself quite clear.

Perhaps I should ask, first of all—however happy the relationship has been in the past—whether the employees of this authority would be protected by hours of work, annual holidays with pay, fair employment practises and all of these other forms of labour legislation? That is just one aspect of it. Am I not right in concluding that they are not protected by such legislation?

Mr. BONNER: That is an inference which may be drawn but it is one which can be drawn only by ignoring the fact of the labour relationships which exist within the hydro now. In other words, there is no position of employment within hydro, in my understanding, in which minimum wages apply. The wages are all well above minimum.

Mr. BREWIN: Even supposing they are, what about construction workers who have not been employed before? By what laws are they protected?

Mr. BONNER: I presume you mean employees on dam construction. They would not be employees of hydro; they would be employees of contractors who would have tendered with hydro. In that respect, the working conditions of such employees of contractors are well understood.

Mr. BREWIN: I notice that subsection (2) of section 56 prohibits a strike or a lockout. I must say that it seems to me that the employees of the authority are left, by this statute, without the normal protection of the laws. They may have had the most happy relationships; I am not in a position to question that. However why do you say I am not right in my conclusion that none of these statutes applies to them?

Mr. BONNER: I merely point out, Mr. Chairman, that the questioner was drawing a technical inference which had no relationship to the facts of the matter.

Mr. BREWIN: I suggest to you that it does not seem technical at all if I am an employee and I know that the provincial legislature has said that a whole series of legislative acts which are designed to protect me have no application.

Mr. BONNER: I appreciate your suggestion, but obviously I cannot follow it. It may result from the fact that we have two points of view on this question.

Mr. BREWIN: You are doubtless experienced in these matters. Have you ever seen—and I confess I never have—any section which takes an authority or a board or any creation of the statute and says that such authority is not bound by any statute or statutory provision of the province? I tell you frankly that I find this unique in my experience. If you know of any similar legislation I would be interested to hear of it.

Mr. BONNER: I do not anticipate that you wish me to canvass the legislation of the country, but in relation to the conclusion which you have offered with respect to the statute, I have already differed. In fact, you were good enough to point out in reading the sections under review that certain specific statutes clearly applied, and I did point out in amplification that a device exists for clarifying further statutes by the order in council, and that is the undoubted effect of the legislation.

Mr. BREWIN: I am sure you are a lawyer, and so am I. I just wonder whether you would mind answering my question, which was: do you know of any other legislation similar to section 53 of this act? If you do, I would be interested to hear of it. I must say that I would be alarmed to hear of it too, but I would be interested.

Mr. BONNER: I think I can furnish additional statutes.

Mr. BREWIN: I would very much like to see it. We have had some trouble in my province of Ontario with attorney generals who were not quite sensitive to all the features of the legislation they introduced.

Mr. BONNER: You will spare me a recitation of legislation of any province but my own, I am sure.

Mr. BREWIN: I will.

As I interpret this, the municipal bylaws, the highway traffic act and a whole host of legislative provisions are not applicable to this authority. Is that contemplated by the legislation?

Mr. LEOBE: On a point of order, Mr. Chairman—

Mr. BONNER: May I go back to this point?

Mr. LEOBE: I would like to raise a point of order. I find it extremely interesting, but I am having a great deal of difficulty in relating this to the Columbia river treaty. It is very interesting indeed, but we can find many interesting things to do and many interesting places to go to. For example, there is a hockey game here tonight.

Mr. BREWIN: I will just explain to Mr. Leboe why it is relevant. It is relevant because, if this does what I think it does—which is to establish some form of servitude or feudal barony—I think we should know about it, Mr. Chairman. I think it is distinctly relevant to what we are asked to consider here. Perhaps Mr. Leboe does not appreciate that point.

Mr. PUGH: Speaking on the point of order, Mr. Chairman, the suggestion I make is that the opposition in the province of British Columbia—the same party as the speaker's—take this matter up there where it would probably have more effect. I cannot see that it is proper to this discussion.

Mr. BREWIN: I am concerned with our responsibilities not with the responsibilities of the opposition or any other party in British Columbia. I would like to get the picture clear for our benefit.

Mr. BONNER: Mr. Chairman, are you discussing now the point of order, or may I go back to the question?

The CHAIRMAN: My impression, Mr. Brewin, has been that the hon. attorney general has been quite frank in his answers. He indicated that he was not in a position to give an encyclopaedic picture of the laws prevailing outside his own province. Is it further information you are requiring actually at this point?

Mr. BREWIN: I am trying to get interpretation of this statute.

Mr. LEOBE: Mr. Chairman, on a point of order the witness did say that all the contracts that are let under the Columbia River Treaty would be aside from the entity, the British Columbia Hydro and Power Authority, and that all the contracts would be let, and that they would be hiring no one on the projects. That is why I raised the point of order because I think we are completely outside the scope of this inquiry.

Mr. HERRIDGE: You will hear the whole scheme tomorrow.

Mr. LEOBE: Let us have it tomorrow then and not tonight.

Mr. BONNER: What scheme do we have under discussion?

Mr. BREWIN: The authority is the agent which in broad terms is to administer the projects. I want to see if this authority is one established by what I would call proper legislation. I am going to suggest at the moment that it is not, but that is a matter for argument later. However, I do want this witness to have an opportunity to give me some explanation.

Mr. BONNER: Far from giving the witness an opportunity, I am being met with a series of adjectives which are at least argumentative. I am quite delighted to discuss this in length if the committee wishes. The implication of the legislation, with deference, I suggest, is that we are trying to narrow our discussions to what is involved.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I raise this point of order: our witnesses have come here to answer questions, and my colleague has been asking questions, and I do not think it is within the province of the witness to tell us how we are going to conduct our proceeding.

The CHAIRMAN: I do not think that what the attorney general has said can be inferred or interpreted as such. I do not see how he can go further. It does not seem to me that he has in any way been evasive or avoided any question put to him by Mr. Brewin. But perhaps we have exhausted the subject.

Mr. BREWIN: Do I rightly understand the witness to say that the reason this authority is exempt from legislation usually regarded as protective of employees is the historic fact that the employees have been so well treated that they did not need protection? Do I rightly understand that?

Mr. BONNER: No. I would with respect differ with my questioner again. I pointed out that the technical inference which my friend has drawn from the statute does not avoid the fact that there is a long history of included labour relationships and collective agreements which had existed and which I presume will exist for all time to come.

Mr. BREWIN: That escapes me, but I will leave the matter for the moment and ask one more question regarding a matter which was discussed earlier today when I did not have this reference in front of me when I asked the witness about it. I am sorry, Mr. Chairman, I cannot find the reference I had. I shall in a minute, I think. Yes, I have it here. It is page 40 of the statement of the province, where I read:

It is quite possible that we may wish to make diversions of water for consumptive use and include incidental power generation. It is our opinion, based on expert legal advice, that such generation would be permissible, providing it takes place en route to the point of final use.

I would like to ask the attorney general if he would furnish us with any written opinions to that effect which he has or which may be available to the committee. I mean to say, I have legal advice to the contrary and I have in written form authorities and argumentations, and I would like to compare them with the legal advice which apparently was relied upon here.

Mr. BONNER: Well, I do not wish to be facetious in acknowledging the question and in formulating a reply, but certainly at the bar it is well known that two opinions can be furnished on every subject.

Mr. BREWIN: I know; it is nice to be able to say that, but I want to judge whether they are supported by authority or not.

Mr. BONNER: The treaty itself is a document which is virtually unique, and the type of precedent which might be available for other lines of legal interpretation to consider is certainly not available to give a definition to the question which has been posed here. We have examined this question within the department—I am speaking of my own department in Victoria—and the view which I indicated earlier in response to a question was the view which was entertained in our department.

Mr. BREWIN: As an experienced lawyer you know the difference between views expressed within an office and a legal opinion. A legal opinion is usually a formal document setting out a problem and stating some of the reasons for arriving at the conclusions, or advising clients about it. Have you any such opinions or not? If you have, will you please produce them?

Mr. BONNER: I have indicated the view on which we have relied in offering the opinion here in the brief, and it has not been placed in a more formal fashion other than with the departmental discussion with which I am per-

sonally familiar. I take it that it is a line or view on a subject on which I admit there are differences of opinion, but I do not think I can offer more to the committee at this time.

Mr. LEOBE: May I point out it says that it is our opinion based on legal expert advice. It does not say that it is based on an expert opinion, but rather on expert advice, and the statement is that it is our opinion based on expert legal advice. There is a difference. I think the hon. member was trying to put words into your mouth, if I may say so.

Mr. BREWIN: If you were familiar with the matter of legal opinions you would know very much what expert legal advice usually means. It does not mean offhand opinion, but rather formal reasoned opinion.

Mr. PUGH: There was some discussion previously with the Secretary of State for External Affairs on why this was not made the subject of protocol. Was it discussed at the time that it should be made the subject of protocol?

Mr. BONNER: Well, the implication of the provision in the treaty is commented upon, with deference, in the protocol. The right to divert for consumptive use at an operative rate is further enhanced by the provisions of the protocol itself. And with the greatest of respect I think it is to the satisfaction of the negotiators and of those on both sides of the table and that the clarification is desirable. I have had some intimation of the hon. Mr. Martin's views on this question and I must say that I support entirely his view on this question.

The CHAIRMAN: I take it this is a supplementary question, Mr. Pugh?

Mr. PUGH: Yes, it is just following on. The Secretary of State for External Affairs stated that they have had conversations on this very point, diversion used for consumptive purposes, but incidentally as well. I was just wondering. Would those conversations be part of a written record anywhere, or is it just the words "O.K., we can use this for consumptive purposes in the course of taking that water for work, and we can use it for power"?

Mr. BONNER: I am not aware of written material on this point which may be available to the national government. The point at which I left this question this morning, Mr. Chairman, was that to arrive at some understanding of the implication of the view which I have expressed as being a reliable view, we should examine the purpose of the section. The purpose of the section is to avoid a diminution of a power benefit situation by massive extractions of water for any purpose other than consumptive use, and consumptive use being defined in terms of irrigation and things associated with agriculture and land improvement. In getting the water from point A to point B for consumptive purposes, a circumstance may exist where a run-of-the-river plant may be installed. This is no violation of the problem of massive withdrawal of water for power purposes. I think it is a correct interpretation to say that the philosophy of the section certainly implies support for what I have indicated.

Mr. PUGH: It is a reasonable explanation.

Mr. BONNER: I hope so.

Mr. HADASZ: Mr. Chairman—

The CHAIRMAN: Is this on the subject?

Mr. HADASZ: About the legal opinion.

The CHAIRMAN: Go ahead.

Mr. HADASZ: I would like to ask the witness whether he would be prepared tonight to comment on the expert legal opinions which Mr. Brewin states he has.

Mr. BREWIN: I hesitate to put them to the witness. I have an opinion here in draft form of about 40 pages with reference to authorities and reasons.

I find it extremely convincing, but I did not think I should impose on this witness to review all these matters. I think you would be here a long time had I gone into these things with him.

Mr. BONNER: With deference, I think it should be observed, in connection with legal opinions, that you can ask for a legal opinion on any point of view, and the fact that this may be reduced to writing does not make it superior to any other which is not reduced to writing.

Mr. BREWIN: Is it not true also than an opinion reduced to writing with some authorities and reasoning attached to it tends to carry more weight than something vague and unsupported by authorities?

Mr. BONNER: You can attach a larger bill to it.

Mr. BREWIN: And you can assess its validity, too.

Mr. FLEMING (*Okanagan-Revelstoke*): I would like to come back to a question introduced earlier today by Mr. Chatterton. I would like to ask Mr. Williston about a press release by Dr. Keenleyside on April 2 concerning the appointment of Mr. James W. Wilson as regional planning co-ordinator with the authority to take care of objectives as stated:

1. Minimize the disruption caused by construction and flooding;
2. Enable relocation of people and facilities affected by the projects to be carried out in a way that will serve the interests of the area and enhance its ability to play a useful role in the life of the province.

There was a good deal more expansion of those objectives in the article. I would like to ask: have the communities in the valley, particularly let us say the city of Revelstoke, to use an example, been approached with a view to studying the implications and actual effect of the Arrow lakes reservoir on that city? I am thinking not just in terms of possible diking, and the protection of lands for expansion in the future as the community grows, but also the impact on the community as construction develops in the area, and there is a requirement for housing, schools, hospitals, and other services. Have discussions been started on these matters with a community such as Revelstoke which will be affected?

Mr. WILLISTON: We have not had specific discussions with communities of that type. Dr. Keenleyside will elaborate on this because it is a responsibility of the Hydro and Power Authority; but, as a general policy we have been laying the groundwork so that we will have both a basic organization and basic planning to meet with these communities. However, we felt it was a violation, actually, of the powers of this committee and the powers of parliament generally if we, in fact, prior to appearing before this committee, and getting some kind of affirmation from the committee, disregarded it altogether and went forth into the communities and started arranging for re-establishment of those communities as though this discussion in respect of ratification by this government meant absolutely nothing.

Quite frankly we have been rather apprehensive and we are anxious that this committee complete its work and give us a decision as rapidly as possible so that we can, in fact, get on with this very vital job, because when we meet with people and discuss their relocation, we want to be in the position where we can in fact finalize the matter. At this stage of the game, until there is at least some indication, we are not in a position so to do.

I am told that we have had special studies made on behalf of the power authority on the situation at Revelstoke. Some preliminary discussions have taken place, and it is planned to carry them forward as soon as possible on a formal basis.

In my own department we have reserved all crown lands in and about these communities and areas and have done so for several years. That land is made available on a first call basis for relocation, and handling of these problems as we see fit. Quite frankly, however, we do not think it right that there should be an open and frontal attack on this matter until this committee, at least, has expressed some opinion concerning the treaty.

Mr. HERRIDGE: Tell us where the reserved crown lands are on the Arrow lakes.

Mr. WILLISTON: On land belonging to the crown in and about the Arrow lakes and Revelstoke. This has been on reserve now for a matter of some two years.

Mr. HERRIDGE: Do you not know that on the Arrow lakes it has an average angle of 45 degrees?

Mr. WILLISTON: Yes, but there are places on the Arrow lakes, when you get back, which people have expressed to us an interest in. We have examined in some detail the area behind Edgewood where we have plans for a community, which community could be taken back over the crown lands to the lands that are private lands and bring them into the whole to meet the requirements. It is true there are areas which are at an angle of 45 degrees, but there also are areas in flat benches where the people wish to live.

Mr. HERRIDGE: Do you not know that 95 per cent of the land is at an angle of 45 degrees in the area?

Mr. WILLISTON: The area in and around the Arrow lakes you make sound most unattractive if you take that acreage you are talking about and insist there is only 45 degree angled land above that.

Mr. FLEMING (*Okanagan-Revelstoke*): In your planning, I appreciate you cannot make commitments on a supposition; but in the planning which you are doing have you considered the impact on the very substantial number of people employed, for instance over the past eight years at Mica creek, where probably it will be beyond their own resources to provide for a sudden influx of a large number of workers and their families over a period of years. Has consideration been given to a means of meeting this circumstance?

Mr. WILLISTON: In respect of these types of situations where there is a temporary or permanent build-up two different situations exist. For example, in the Peace river area an arrangement has been reached with regard to schools whereby during the period of construction the people permanently resident within the Hudson-Hope community and thereabouts pay a standard tax rate which is applicable to the areas of the North and South Peace river, and the B. C. Hydro and Power Authority picks up the residual amount of the cost for the schooling and other basic services. This means that the people who are permanently located there do not become freeloaders; so on the other hand, it does not burden them with any of the additional costs of the influx of population caused by construction.

In respect of Mica Creek, that area will be completely without a community and, in all probability, that situation will exist there until a similar type of arrangement with the Power Authority is made when they commence working there. This is going to affect my community at Valemount as well as Mr. Fleming's community of Revelstoke which will feed into the Mica project. I would say that a certain amount of business that accrues to these communities which in fact, does not set up a temporary situation will be handled as one of the adjuncts to the business which is created in the community by the project, but any large influx such as I have mentioned will necessitate special provisions.

Mr. FLEMING (*Okanagan-Revelstoke*): And, I presume, a formula exists in that respect.

Mr. WILLISTON: Yes.

Mr. FLEMING (*Okanagan-Revelstoke*): I have one further question. Earlier today it was indicated that it is anticipated that generators would be installed at Mica creek perhaps for the production of power at the dam site by 1972 or 1973, or thereabouts; is it now possible to estimate when the generating installations, the dams and generators, will be installed at Downie creek and Revelstoke canyon, or is it possible to look that far ahead?

Mr. WILLISTON: I think some of the experts have some tentative dates lined up. I do not know whether or not Mr. Kidd is prepared at this time to give even an informed guess.

Mr. KIDD: This depends so much on how the load growth develops in the province. I think about all I can say is that Downie and Revelstoke will be built and installed as they are required. Now, certainly we are expecting the Peace to carry our load until 1973 or 1976 and Mica, with 1,800,000 kilowatts of new power, might carry us to 1980, and then we will develop either Downie or Revelstoke and carry on in a well planned way to meet load as required.

Mr. DAVIS: Views have been expressed in respect of the protocol, some to the effect the protocol is merely a clarification of the original treaty, whereas others claim there are some substantial modifications to the treaty. I would like to ask Mr. Williston about three of these items and to ask him whether they are merely clarifications or whether they are significant modifications to the treaty.

Incidentally, the protocol appears at page 111 of the white paper. For example, the first item of the protocol deals with the definition of a flood in the United States. It not only requires this be defined but that also United States storages be used first in respect of meeting these flood control requirements and, finally, that some machinery be set up to resolve these. Would you care to express an opinion if this is merely a clarification of the treaty or whether it modifies the original treaty?

Mr. WILLISTON: I would say in respect of the discussions which took place surrounding the original treaty that among the engineers and those dealing with the matter that that was the practical approach to the problem, and it was not spelled out. I also admit in a forthright way when someone has not been through that tenuous system of negotiation and is confronted with a document he would not receive such an interpretation. I might follow that up by saying further that new people who would, in all probability, become associated with the treaty, would likely be in the same position. I do say that although that understanding was shared by the original negotiators and the engineers at the time it was not spelled out in such detail, and this is a definite improvement. However, I do say it was accepted readily by the United States authority. I think they accepted the clarification along with ourselves, and I do not think there is any doubt but that it is a definite improvement, for future administrators particularly.

Mr. DAVIS: You would not go so far as to say this is a modification?

Mr. WILLISTON: Well, in respect of the engineers who were a part of that there certainly was no great difficulty. Have you anything to say in this respect Mr. Kidd?

Mr. KIDD: This is a clarification.

Mr. WILLISTON: Mr. Kidd still certifies it was a clarification. It was an understanding which he had on our behalf as a technical expert throughout those discussions, and I have no more than that to say.

Mr. DAVIS: You say this was an understanding in the minds of some of those who have been associated with the development of the treaty and these negotiations but that it was not explicit.

Mr. KIDD: It was not explicit in the treaty.

Mr. DAVIS: And, therefore, it was possible for numerous critics of the treaty to say that the United States could at some future date make calls which, in the extreme, might be categorized as nuisance calls, and were free to do so within the language of the treaty.

Mr. KIDD: These critics have made their case on this very point.

Mr. PUGH: I did not hear the answer.

Mr. KIDD: Some of these critics have already stated this particular misunderstanding, and I think it now has been cleared up completely in the protocol.

Mr. DAVIS: Well, it makes future misunderstandings less likely, in any case. Is that a minimum statement?

Mr. KIDD: I think that is a minimum statement indeed.

Mr. DAVIS: Another item has to do with the disposal of the downstream benefits.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Which one is that?

Mr. DAVIS: I am looking for it at the present time. The treaty stated that the agreement of terms of sale such as price would be determined as soon as possible after ratification. The protocol now makes it necessary for these terms to have been established, agreed upon and finally confirmed at the date of ratification; in other words, we do not enter into a commitment to build projects in Canada without finally knowing what will be paid.

Mr. KIDD: That is correct, and the result of that protocol is shown in the terms of sales agreement.

Mr. DAVIS: Now, is that a qualification or is that a modification of the treaty?

Mr. KIDD: I suppose you would call that a modification.

Mr. WILLISTON: May I speak specifically to that point. My colleague and I, along with our negotiating group, Mr. Bassett and Dr. Kennedy, insisted that prior to ratification we have the assurance that notes would be drawn up and that negotiation would be carried on before indicating the sales agreement for the downstream benefits. We thought this to be necessary because once the treaty was ratified, and there was no prior agreement, our negotiating position was lost for all time. The reason we did not insist upon it at the time, or could not insist upon it was that we were told very forcibly that it was impossible to pass these notes prior to the ratification of the treaty. So, we had this in the form of an understanding. I must admit I am most happy that this modification, call it what you will, on behalf of British Columbia, has been incorporated in the protocol.

Mr. DAVIS: That was item 3 of the protocol. Turning to item 7, it is my understanding that Canada is now given full discretion to decide from which storage projects release can be made, and also that Canada has discretion in respect of the detailed operation giving monthly storage quotas required by the agreed operating plan drawn up five years in advance. In other words, Canada has a discretionary performance within its own boundaries?

Mr. KIDD: This was always understood during the negotiations of that agreement. This was the basis upon which all studies of power output were carried on.

Mr. DAVIS: And this item spells it out as far as Canada is concerned. It is the performance at the boundary line that is important, and what happens within Canadian territory is entirely up to the Canadian entity?

Mr. KIDD: That is correct.

Mr. PUGH: That is correct provided that we deliver the goods. We have to have a stream of water as per the original treaty; is that right?

Mr. KIDD: That is correct. As long as we provide the required flow at the boundary we are in accord with the treaty.

Mr. PUGH: This was the understanding when the treaty was drawn?

Mr. KIDD: That is correct.

Mr. DAVIS: One could not discover that fact by the language of the treaty, but it was the understanding during the development of this treaty?

Mr. KIDD: That is correct.

Mr. DAVIS: Item No. 8 is in respect of the use of the longer period, and I refer to the longer base period for the determination of downstream benefits. It states that the use of the longer period has the effect of increasing the average flows under study, thereby increasing the need for control by Canadian storage. The resulting average increase in Canada's downstream energy benefits is approximately 500 million kilowatt hours annually, or an increase of 14 to 18 per cent of the total energy benefit. Is that a modification as a result of protocol negotiations or merely a clarification?

Mr. KIDD: Under the policy, change in the period in respect of which the downstream benefits would be covered, was allowed for in the treaty.

Mr. RYAN: Where is that provided?

Mr. DAVIS: Was it not generally agreed in the treaty that the 20 year period from 1928 to 1948 would be the base period for the purposes of calculating the downstream benefits?

Mr. KIDD: Perhaps I could read the particular item. It is included in annex B, paragraph 6, and states:

Unless otherwise agreed upon by the entities, the determination of the downstream power benefits shall be based upon stream flows for the twenty year period beginning with July 1928 as contained in the report entitled "Modified Flows at Selected Power Sites—Columbia River Basin dated June, 1957.

The entities at any time could agree to a different period.

Mr. RYAN: That does not tie this down at all.

Mr. KIDD: No, this leaves it open for the entities to decide.

Mr. RYAN: It certainly does.

Mr. DAVIS: The negotiated protocol in fact changed the base from 20 to 30 years?

Mr. KIDD: Yes. I agreed with that statement originally but I stated that the entities were allowed, under the treaty at that time, to agree to a change if they wished.

Mr. DAVIS: The United States authority could agree to such a change?

Mr. KIDD: That is right.

Mr. DAVIS: This change or difference in interpretation has taken place as a result of the protocol being negotiated?

Mr. KIDD: Yes.

Mr. WILLISTON: In deference, I think you must acknowledge this fact, which has been pointed out by my colleague, that in the first series of negotia-

tions which took place, and which had to do with drawing up the treaty document since the original treaty document was drawn up, owing to the passage of time which has taken place, we are now involved in a phrase dealing with the implementation of that treaty document, and the implementation of the clarification. There were, as Mr. Kidd points out, certain thoughts, that in this clarification between the entities, room should be allowed for that negotiation. I think that is part of the reason why we have improvements now. We are dealing with implementation in the second phase and we are doing it before we actually have accomplished ratification. This is part of the reason we have these clarifications and improvements at this time.

I will be honest in stating that I feel the clarifications and improvements were better obtained at this time than they would have been after ratification. Nobody is arguing this protocol. It has in fact been a good thing and we are not arguing with it.

Mr. DAVIS: My impression is that the improvements that might have taken place within the framework of the treaty have now in fact taken place; is that right?

Mr. WILLISTON: These have now taken place without any argument.

Mr. FLEMING (*Okanagan-Revelstoke*): The negotiation in respect of the protocol, Mr. Williston, I gather was enhanced by protection in the treaty itself to provide for such negotiation?

Mr. WILLISTON: When you people finally resolve your problems we will be quite happy with your general efforts as far as British Columbia is concerned.

Mr. HERRIDGE: Mr. Chairman, I should like to ask a few questions of Mr. Bonner and I do so at the request of the labour unions in British Columbia who are concerned to the extent of sending representatives to appear before this committee. They have expressed interest in sections 53 and 56 of an act to establish the British Columbia Hydro and Power Authority. This hydro authority makes arrangement by agreement with contractors and unions in respect of construction on the Columbia. I have been asked to put these questions to these individuals.

Section 56 of this act states:

Where a conciliation board has been appointed under the *Labour Relations Act* to deal with a dispute between the authority and one or more of its employees or a trade-union, the report of the conciliation board is binding in every respect upon the parties.

Mr. BONNER: Excuse me, Mr. Chairman. From what article are you reading, Mr. Herridge?

Mr. HERRIDGE: I am reading from section 56 of an act to establish the British Columbia Hydro and Power Authority which was certified as correct and passed third reading, on March 10, 1964 in the British Columbia legislature.

As this is compulsory arbitration, why did you consider it necessary that these employees be subjected to compulsory arbitration by law?

Mr. BONNER: Mr. Chairman, with deference, I believe Mr. Williston, who is the director of hydro, has a better background in respect of this section than I could offer to the committee. Mr. Williston has expressed willingness to discuss this point.

Mr. WILLISTON: Mr. Chairman, we are dealing with the ratification of the Columbia river project; we are not dealing with the over-all operation of the British Columbia Hydro and Power Authority, which is a provincial responsibility.

In so far as the labour relations and negotiations are concerned, I am going to ask you, Mr. Herridge, to question Dr. Keenleyside on the arrangement which

has been set forth with the unions. As to the hypothetical problems which you are raising concerning the carrying out of these projects under the terms of the treaty which is your responsibility in this committee, they have already been attended to with the unions and with the union officers. They have a firm agreement. Dr. Keenleyside can give you the complete details of the agreement when he is a witness on this stand.

Mr. HERRIDGE: Mr. Chairman, we will wait tomorrow for the questioning of Dr. Keenleyside but if an agreement has been reached by the unions why is it necessary to provide in this statute for compulsory arbitration and to make strikes illegal; why is it necessary to put it into the statute if it has been reached by agreement?

Mr. BONNER: I think the following will be a matter of interest. The statute unfortunately is not before me but I have a recollection of its passages and much of its detail. The hydro act which has been cited and on which questions have been asked is not an act which is operative in respect of the British Columbia Hydro at the present time. It is an entity which is not invested with assets nor the undertaking of the hydro operation. It is an entity which in time may receive the hydro, but it has not done so.

Mr. HERRIDGE: Mr. Chairman, this act has been passed and you say it may apply to the construction workers.

Mr. BONNER: With respect, Mr. Herridge, I said it would not. My point in connection with the construction workers was this, and I welcome the opportunity of repeating it because I think it is a matter of mutual interest, that the construction workers are employees of contractors and subcontractors; not employees of hydro.

Mr. HERRIDGE: Well now, Mr. Chairman, I have a transcript of a meeting of the British Columbia Hydro and Power Authority, a verbatim report of the city council meeting on February 20, 1964. It was a tape recording taken of this meeting, and a copy was sent to me. There are a lot of comments which I shall make on it tomorrow. Dr. Keenleyside said:

We have also got an agreement to which all contractors will have to put their names before they get a job on the construction, and this agreement says that they will have to live up to certain obligations that we have undertaken in relation to labour unions. I think we have got both the contractors and the labour unions.

It is obvious there is going to be a relationship between the construction contractors and British Columbia Hydro.

Mr. MACDONALD: Surely this question would be more germane when the gentleman himself is a witness here, and comments should be addressed to him at that time rather than speculating on the relationship of the British Columbia Hydro right now. Surely it would be more economical on the committee side to postpone this until Dr. Keenleyside is here.

Mr. HERRIDGE: My point is, why is it necessary, in view of the coming relationship between the British Columbia Hydro and the contractors, to have this section in this act when Dr. Keenleyside said it has been reached by agreement? This is what the unions have written me.

Mr. BONNER: I am just a little interested in this statement because I am not aware that Dr. Keenleyside has ever been at a meeting with the city council on this subject.

Mr. HERRIDGE: Yes. Here is the document. It was a tape recording taken of his remarks, and I have the transcript.

Mr. BONNER: May I have the advantage of that document at a later time?

Mr. HERRIDGE: It is most interesting. You can have a look at it.

Mr. DAVIS: On a point of order, Mr. Chairman. In view of the pressure on these gentlemen's time and the fact that shortly we will be called to a vote, might it not be appropriate to confine questions to points of general policy so that conceivably they can complete their evidence tonight?

The CHAIRMAN: I know, gentlemen, that it has been at some sacrifice to the other witnesses but all the members of this committee, and certainly the staff, have been working very long hours to accommodate us. I certainly do not wish to rush the committee or to appear to be doing so but if this could be deferred until the questioning of Dr. Keenleyside it might be preferable.

Mr. HERRIDGE: I am quite agreeable.

Mr. LEBOE: I still insist that the examination of an act of another legislature is completely out of order in this particular committee. If this has to be tested, there are courts in the country to test legislation; we are not here to test legislation or to cross-examine witnesses on the basis of the legislation of another place.

The CHAIRMAN: Mr. Leboe is pointing to the relevancy of questions.

Mr. BREWIN: If you want an argument on that, is it not perfectly obvious, and it has been reported not once but several times in the brief, that this particular authority has been given the responsibility for the administration, the details of which affect the people concerned with it? That surely is part of the total project that we are asked to consider. Surely it is relevant for us to go into that.

The CHAIRMAN: I certainly do not think any members of the committee want the Chairman to cut short particularly any group which would be critical of this treaty. Surely it is only fair that they be given the widest latitude possible. However, I do ask all members of the committee to recognize the great pressures that there are on the province of British Columbia in having so many expert witnesses available for three days, Monday, Tuesday and Wednesday of this week. We have gone to a good deal of trouble to arrange the hearings and we have met three times today. If we could defer any questions until later, I think it would be helpful.

Mr. HERRIDGE: I said I was willing. I was just interested in asking Mr. Bonner that question.

Mr. BONNER: I appreciate the committee's wishes to leave the questions for another time, but I would like to leave the statement on the record which will no doubt be amplified tomorrow that the labour relationships on the treaty projects, as the labour relationships on the Peace river projects, are fully covered by the most comprehensive agreements, and there is no reason to believe that the working conditions are not of the highest, and for that matter so are the wages.

The other point is that when contractors go on to a job subject to bid they bring employees with them under various arrangements, and only in relation to the contract are these people associated with the head contracting party. This is essentially the condition which prevails at the Peace river at the present time and which, with the approval of this committee and the houses of parliament, will in due time prevail in the treaty projects.

Mr. HERRIDGE: I was interested in the necessity for the sections in the legislation.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Could I ask one question of Mr. Bonner to clear up something? I do not know if I understood him properly. It concerns the present position of the British Columbia Hydro and Power Authority. It seemed to me he said that it has not yet been entrusted with this work.

Mr. BONNER: I believe the committee will permit me to digress by way of explanation to say we have had certain examination of the Hydro structure by litigation in the past couple of years, and we felt it advisable legislatively to move to provide a Hydro authority in 1964, which is the statute under discussion. In point of fact the Hydro representing the former B.C. Electric and the former B.C. power commission are carrying on their activities under previously enacted legislation. That was the point of my remark that the statute under scrutiny was in effect an empty statute because it had not been invested with the undertaking of the preceding entities.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I understand.

The CHAIRMAN: Mr. Byrne?

Mr. BYRNE: My question is perhaps out of sequence now because it is connected with those asked by Mr. Davis.

Having regard to the many uncertainties that existed as of January 17, 1961, and having regard also to the fact that there was a change of administration pending in the United States, which would not present very great difficulty, would the minister say that it was probably premature to sign the agreement at that time? I am asking for an opinion now. Would you advise it in similar circumstances?

Mr. WILLISTON: It is a hypothetical question. However, we were set up in such a way that a time period would elapse so that ratification would take place. Therefore, you have answered your own question really.

Mr. PUGH: Mr. Williston, is there any liaison between the United States, Canada and British Columbia, between engineers all round, with regard to the type of dam, the construction and all that sort of thing?

Perhaps before you answer that you will look at article XVIII which is headed "Liability for damage". An earthquake, of course, is an act of God, but it might be of such a nature that a dam improperly constructed, let us say, in the light of United States engineering, might give way or cause considerable damage below. Is there any liaison between the various governments?

Mr. WILLISTON: I do not think that liaison in fact would ensure the safety of the dam. I think there is much interchange of information, however, between the engineering corps and the entities from sheer interest. However, in the final analysis, British Columbia and its entity have to accept the responsibility for the types of dam.

There has been question from time to time of the foundationing of the Arrow lakes structure. In that regard some of the eminent authorities on dam foundation are being brought to this committee, on behalf of the hydro, to be examined.

I would say that in the same situation in regard to the Peace river, after obtaining the best engineering data we could obtain in British Columbia on large dams, outside British Columbia and in Britain, we appointed a consortium of three engineers, one from Sweden, one from Britain and one from the United States. These are the three eminent large-dam experts in the world. They were asked as a consortium to review all the plans and specifications for the construction of the Peace river project. Our experience with that eminent board has been so good it has been suggested that when we are in a position to proceed with the Columbia river projects it might be a very worth-while step to have a similar board in a similar position relative to those projects.

Certainly we are cognizant of the responsibility we have in constructing the dams, and we cannot absolve ourselves from that responsibility in any way other than by ensuring the engineering is of the highest order possible.

Mr. PUGH: It is because of the divergence of opinion that I asked the question.

You mentioned absolving yourself from responsibility. You could not do that because you have a prime responsibility; you are building the dams. You cannot absolve yourself, but might you not protect yourself by obtaining an assertion from the United States authorities or the United States government that the dams you are about to build are of the best and that they could offer no improvement?

Mr. WILLISTON: I am informed that even though they gave that assertion it would have no effect; we are still held responsible.

Mr. HERRIDGE: Is it correct to say, then, that there is no engineer in Canada in whom you have sufficient confidence, or no group of engineers in whom you have sufficient confidence, to give a final decision as to the safety of the High Arrow dam?

Mr. WILLISTON: That is not true. I would say, and I would go very much further than to say—both as a director of hydro and as a member of the government in British Columbia—that if there is ever any question and if there were any authority known anywhere which would give additional assurance, that person, whoever he might be, if so requested could be obtained for the Hydro Authority.

Men of competence concerning dams of this size and type can be numbered throughout the world on the fingers of both hands. Certainly we feel that the best engineering advice possible should be made available to us. We do not build enough dams in Canada of this type for anybody to have gained the amount of experience to which you are alluding right now. I think it is a world type of situation in which one has to gain one's experience.

The CHAIRMAN: Does this represent the conclusion of questions?

Mr. PUGH: I would like to ask one more question.

The CHAIRMAN: Yes, Mr. Pugh, please do.

Mr. PUGH: The best legal advice states that if you were to act in conjunction with the United States you could not absolve yourself from a charge of negligence in the event—and it is a horrible thought—of a dam giving way and resulting in flood downstream. However, could you not put yourself in a much better position by more consultation with the United States authorities as to the actual physical dam and the construction, and all the rest? You have said that the legal opinion you have obtained shows that you would not obviate your responsibility, but could you not protect your responsibility?

Mr. BYRNE: You protect it in the treaty—"acts of God", and so on.

Mr. WILLISTON: My engineers point out, in deference, that they have to finally approve such plans and that adequate precautions have been taken.

We already have an answer to Mr. Herridge in part. The Kenny dam, a large earth structure above the Fraser river system, would cause very substantial damage in British Columbia and on the Fraser river system generally if it ever let go. If the whole Alcan reservoir came down the Fraser river, the damage would be colossal. We would not be able to handle it.

Mr. HERRIDGE: Is that based on rock foundations?

Mr. WILLISTON: I would ask Mr. Paget or someone who is an engineer to answer that.

Mr. PAGET: It is a rock foundation that is badly faulted, and it is considered to be a very difficult situation, one which required the most ingenious grouting treatment of any dam built up to that time in order to make it safe and prudent as a structure. It is for these things that we are paid; we are paid to see that they are done.

Mr. WILLISTON: The experience we have in Canada with regard to dams and the fact that we are going outside of Canada for authorities also, and for

assistance, are not indicative of the lack of competence of Canadian dam experts, because in the world-wide scene apparently Canada has as many as other countries or more than other countries who are used by other countries. Some of the foremost authorities will be before you here and they are Canadian and, in questioning them, you will find their expert testimony is accepted in all parts of the world. They are eminent authorities on the whole world scene.

Mr. BREWIN: Mr. Chairman, before we adjourn may I inquire whether this committee as a whole has approved of the inhuman suggestion that we meet at nine o'clock tomorrow morning? Has that been approved? If it was, it was in my absence.

The CHAIRMAN: This was suggested by the steering committee and was approved by the committee as a whole.

Mr. RYAN: I move adjournment.

The CHAIRMAN: The committee is adjourned until nine o'clock tomorrow morning.

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HOUSE OF COMMONS

Second Session—Twenty-sixth Parliament
1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 7

WEDNESDAY, APRIL 15, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESSES:

Mr. H. L. Keenleyside, Chairman; Mr. W. D. Kennedy, Division Manager, Economic and Commercial Services; Mr. J. W. Milligan, Reservoirs Engineer, British Columbia Hydro and Power Authority; Mr. Gordon Kidd, Deputy Comptroller of Water Rights, Province of British Columbia.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--|---|----------------|
| Brewin, | Fleming (<i>Okanagan-Revelstoke</i>), | Macdonald, |
| Byrne, | Forest, | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Gelber, | Martineau, |
| Cameron (<i>Nanaimo-Cowichan-The Islands</i>), | Groos, | Nielsen, |
| Cashin, | Haidasz, | Patterson, |
| Casselman (Mrs.), | Herridge, | Pennell, |
| Chatterton, | Kindt, | Pugh, |
| Davis, | Klein, | Ryan, |
| Deachman, | Langlois, | Stewart, |
| Dinsdale, | Laprise, | Turner, |
| Fairweather, | Leboe, | Willoughby—35. |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

WEDNESDAY, April 15, 1964
(13)

The Standing Committee on External Affairs met at 9.00 a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Byrne, Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Fleming (*Okanagan-Revelstoke*), Forest, Gelber, Groos, Haidasz, Herridge, Kindt, Laprise, Macdonald, Matheson, Nesbitt, Patterson, Pugh, Ryan, Stewart, Turner, Willoughby (22).

In attendance: From the British Columbia Hydro and Power Authority: Dr. H. L. Keenleyside, Chairman; Mr. W. D. Kennedy, Division Manager, Economic and Commercial Services; Mr. J. W. Milligan, Reservoirs Engineer; Mrs. P. R. Kidd, Assistant Secretary; From the B.C. Department of Lands, Forests and Water Resources: Mr. Gordon Kidd, Deputy Controller of Water Rights.

Mr. Cameron (*Nanaimo-Cowichan-The Islands*), on a question of privilege said he wished to protest against the manner in which these hearings are being conducted. He moved, seconded by Mr. Herridge, that this committee, after the meeting next Thursday April 16, should revert to the customary parliamentary procedure and meet twice a week, the next meeting to be Tuesday next, April 21. After discussion, and the question being put, the motion was resolved in the negative, on the following division: Yeas, 2; Nays, 13.

The Chairman introduced Dr. Keenleyside, who in turn introduced the members of his delegation. Dr. Keenleyside read a prepared statement and was questioned. He was assisted in answering questions by Mr. Kennedy and Mr. Milligan.

Dr. Keenleyside, in answering questions, referred to charts entitled *Power Resource Development to Meet Peak Load Growth in British Columbia, Generating Station Diesel, Generating Station Hydro, Generating Station Thermal over 132 KV Line, 1963, and Future*, which the Committee ordered to be printed as part of this day's Minutes of Proceedings. (See Appendices F, G and H.)

At 11.05 a.m., the Committee adjourned until 4 o'clock p.m. this day.

AFTERNOON SITTING

(14)

The Committee reconvened at 4.00 p.m., the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Brewin, Byrne, Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Dinsdale, Fairweather, Forest, Gelber, Groos, Herridge, Kindt, Laprise, Langlois, Leboe, Macdonald, Matheson, Nesbitt, Patterson, Pugh, Ryan, Stewart, Turner, Willoughby (26).

In attendance: The same as at the morning sitting.

The Committee resumed the questioning of Dr. Keenleyside, who was assisted by Mr. Milligan, Mr. Kennedy and Mr. Kidd.

During the questioning, Dr. Keenleyside referred to three maps showing the effect of the proposed projects on the Arrow Lakes, Duncan Lake and Mica areas, which the Committee ordered to be printed in this day's Minutes of Proceedings. (*See Appendices I, J and K.*)

During the meeting the Vice-Chairman, Mr. Nesbitt, took the Chair.

The questioning continuing, the Committee agreed to hear Dr. Keenleyside further at tomorrow's meeting, and to cancel the meeting scheduled for Friday, April 17, 1964.

At 6.05 p.m., the Committee adjourned until 10.00 a.m., Thursday, April 16, 1964.

Dorothy E. Ballantine,
Clerk of the Committee.

EVIDENCE

WEDNESDAY, April 15, 1964.

The CHAIRMAN: Gentlemen, I see a quorum. I have the honour to introduce to the committee this morning the British Columbia Hydro witnesses, Dr. H. L. Keenleyside, chairman of the British Columbia Hydro and Power Authority; Mr. W. D. Kennedy, division manager, economic and commercial services; Mr. J. W. Milligan, reservoirs engineer; Mrs. P. R. Kidd, assistant secretary of the British Columbia Hydro and Power Authority, and Mr. Gordon Kidd, deputy comptroller of water rights, province of British Columbia.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, before we proceed I would like to rise on a point of order or a point of privilege, whichever you care to call it, and make a very strong protest to you about the manner in which these hearings are being conducted. We have been sitting morning, noon, and night, and we have had no opportunity at all to examine the witnesses. We have had no notes; we have only had one resume of the proceedings so far and this makes it utterly impossible for any logical or reasonable examination of witnesses in the future until we get that material. I am well aware, of course, that there may be a desire on the part of many to speed these proceedings up as rapidly as possible. There are, I suppose, a number of bodies to be buried, but I suggest to you that this is making a mockery of the whole examination of this problem.

To me it has been a melancholy spectacle to see the eating of words that has taken place, and how members of this committee have come before this committee to prove that what was white last year was black this year, and what was black last year is white this year, and to shuffle into this committee room and to eat many of their words. It must be a very nauseating diet. Therefore I suggest to you that in future we revert to the customary parliamentary manner of holding these hearings twice a week.

While we have made special provision for the appearance of the delegates or witnesses from British Columbia, the time has now come to revert to more normal procedures. I find this a most melancholy spectacle. I am well aware that some people may feel that they have to do it. I know they are doing their duty to their political parties. But I suggest to you that it would be well to consider a sentence which I read in a book not long ago which said that an act must be virtuous before it can be our duty to do it.

I commend some of those who have been performing their party duty to this committee rather than their public duty. Therefore I move, seconded by Mr. Herridge, that after the hearing on Thursday we revert to the custom of meeting twice a week, and that our following meeting take place on Tuesday of next week.

The CHAIRMAN: I recognize Mr. Patterson.

Mr. PATTERSON: I was just going to say that as far as the remarks of Mr. Cameron are concerned, they may be one man's opinion, as he assessed the activities and the work of this committee, but certainly it is not unanimous by any means. There may be a point in what he has said regarding the hours of sitting. But certainly I think his remarks about the conduct of this committee are very greatly exaggerated.

Mr. PUGH: I do not think it is necessary to rise to answer the points raised, but it does seem to me that the mover of this motion has had quite a bit to

say. As far as I am concerned, personally, I think a lot of it is entirely out of order. He made political references and tried to combine them with what occurs in the committee. He gives no pat on the back to those who have come here from afar at the request of the committee for a stated day. He says we should meet twice a week after this, and the motion says that we should go back to meeting twice a week. How then are we to hear these witnesses that come from afar? Are we going to bring them down and send them back, or pay their hotel bills or what? To my mind the request is completely illogical, apart from being highly political.

There are certain references to parties made which to my mind—and I hope I am not alone in this—stretched the point inside out. I have never heard anything like it as far as I am concerned. I am dead against the motion. We have a steering committee, and his party has had a representative on that steering committee. Certainly they must agree. I see no reason why we should not carry on with that agreement.

I resent the fact that the mover of this motion has sort of left the implication that we are to whitewash for political or party purposes all that has gone on. I cannot understand the purpose of his words.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am grateful to Mr. Pugh for underlining my statement, crossing all the t's, and dotting all the i's.

Mr. BYRNE: I think this is a typical socialist holier than thou attitude. The only melancholy aspect of it is to sit here and look at the long faces of the socialists. This holier than thou attitude gives me a pain in the neck. If the evidence had been tabled following the signing of the treaty on January 17, 1961, there would be no question so far as I am concerned on what was the proper sequence and proper development of the Columbia river. We have been misinformed to a considerable extent, or we did not receive the information at all. The fact that some of us believe that this is a good treaty now where we did not believe it last year is no reason to impute motives to members. I think the committee deserves an apology from the hon. member.

Mr. DEACHMAN: This is a very important committee. I think this Columbia committee is just as important to western Canada as was the seaway and so on to eastern Canada. I think those of us particularly from British Columbia ought to be glad to be able to spend as much time as is necessary on this to give full consideration to it. We have been well briefed. We have had the documents in advance, and I am surprised that an hon. member of this committee, who comes from British Columbia, should feel that he is being pushed too hard in the committee hearings that are necessary to see this thing through.

Mr. MACDONALD: May I just say that Mr. Cameron has imputed partisan motives here. Of course we are all here on behalf of our parties. Everybody is obviously here on behalf of his party, even Mr. Cameron. We have been sent here, particularly the British Columbia members, to work. I think we should get down to work. The N.D.P. members have been calling for these hearings for three years in order to get information. Now they say they are getting information and they say they are getting it in too large quantities, and they do not want to put in a little overtime. I think it is important for Canada to get on with a full consideration of this treaty and that we should work as many hours as we can.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): My complaint is that we are not being given an opportunity to do the work which we are sent here to do. It is ludicrous for us to sit here day after day all day and to have no opportunity to study the evidence which has been given us before other witnesses appear.

Mr. DAVIS: We have a motion before the committee duly moved and seconded. May we have a vote on it now.

Mr. BYRNE: Let us put Mr. Cameron on the steering committee, too.

Mr. HERRIDGE: I speak in support of Mr. Cameron's motion. Let us get back to the purpose of the motion. Everyone knows that we cannot carry on at this pace. We have to be given time to read the evidence, to study it, and to make notes. We cannot carry on correspondence. We gave special consideration to the people coming from British Columbia because they had to come from some distance, but the purpose of this motion is to return to some normal procedure as far as this committee is concerned. I have never seen hours of committee sittings like this after being a member of committees for years. Therefore I urge that consideration be given to a return to those procedures which were adopted by the steering committee in the first instance.

The CHAIRMAN: Are you suggesting there has been any failure to comply with the directions given by the steering committee?

Mr. HERRIDGE: No. I mean the original motion adopted by the steering committee did not provide for this type of hearing, having regard to the number of hearings we have now had.

The CHAIRMAN: Are you suggesting there has been any non-compliance with what the steering committee recommended to us in any respect?

Mr. HERRIDGE: Yes. The steering committee recommended that we sit on Tuesday and Thursday, and we did that on one occasion.

The CHAIRMAN: Is the committee ready for the question?

Some hon. MEMBERS: Question.

The CHAIRMAN: Those in favour; those opposed.

Motion negatived.

The CHAIRMAN: Now, gentlemen, I am sensible in respect of the question raised by Mr. Cameron. I think the problem is we do have a very busy schedule. There is probably no other committee of the House of Commons that is charged with a responsibility to Canada such as this. I believe it is manifest that those on this committee from each party have to sacrifice other work in other places for the work of this particular committee.

General McNaughton was kind enough to indicate a few moments ago that he hoped to have his brief ready for us shortly, and perhaps even tonight. However, I point out to my friend, Mr. Cameron, and my friend Mr. Herridge, that until the committee receives this we cannot distribute it. It is for the convenience of the general that tomorrow we will not be hearing General McNaughton, in accordance with the discussions and a clear understanding by our steering committee.

We want to be accommodating to everybody, and I think we are periodically going to have to change as conditions necessitate in order to accommodate a good many different persons. However, personally I cannot see how we very well can seriously let up on a pretty heavy and detailed program. Mr. Cameron will be represented personally or by some other member of his party on the steering committee, as he has been, and everybody will try to be as accommodating as possible in respect of the work load.

We are ready for the submission by Dr. Keenleyside.

Dr. H. L. KEENLEYSIDE (*Chairman, British Columbia Hydro and Power Authority*): Mr. Chairman and gentlemen, with your permission I think I should begin by qualifying my associates and colleagues who are on the platform this morning to help me in this presentation.

Mr. Kennedy is the manager of the economic and commercial services division of the British Columbia Hydro and Power Authority and is a registered professional engineer in the United Kingdom as well as in British Columbia.

He graduated from the University of Manchester in 1934 in electrical engineering and served in electrical units of the Royal Navy in the Far East and Africa as well as Europe. After the war, Mr. Kennedy was with the electrical utilities in the United Kingdom until 1956, and came to Canada in 1957 to join Crippen Wright to work with them on their report on the Columbia river. He joined the British Columbia Power Commission in 1960 as head of the Economic and Commercial Services Division, and has been working on the Columbia river power development for seven years in a very senior capacity.

Mr. Milligan is our reservoirs engineer. He also is a registered professional engineer, having graduated from the University of British Columbia in 1934 with honours in civil engineering. Mr. Milligan served in the signals with the Royal Canadian Navy during the war and joined the British Columbia Power Commission in 1949 where he rose successively as design engineer and project engineer to his present position of being responsible for our Columbia reservoir activities. He was for three years secretary and then chairman of the Columbia Reservoir Redevelopment Committee and has worked directly on the Columbia for five years.

Mrs. Kidd, who was born in Hawkesbury, was educated at Cornell and the University of Toronto where she attained first class honours, and the Governor General's gold medal. At the outbreak of the war she volunteered for service in Ottawa and worked for eight or nine years at the National Research Council here. After a brief service as Administration Officer in the Department of Mines and Resources, she spent nine years at the United Nations where she rose to the post of Project Control Officer in the technical assistance administration. For some years she was the senior Canadian woman on the staff of the United Nations. Mrs. Kidd joined the British Columbia Power Commission in 1959 and has been involved in the Columbia Reservoir Redevelopment Committee which is the organization we set up to study problems relating to the difficulties which would be experienced as a result of the creation of the reservoirs. She has been with the British Columbia Power Commission since 1960 and now is the assistant secretary of the British Columbia Hydro and Power Authority.

We have asked Mr. Gordon Kidd, who you know is the Deputy Comptroller of Water Rights, to sit with us this morning. Our own people have been working together with him as a team now for a good many years, and it is difficult to distinguish between Mr. Kidd as a member of our united team, and in his other capacity as Deputy Comptroller of Water Rights.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Before Dr. Keenleyside goes on, may I ask whether there are copies of his brief for the members of the committee?

Mr. KEENLEYSIDE: I believe there are copies here now and I have no objection if the committee wishes to have them.

It is a privilege to appear before this committee for the purpose of defining and explaining the interest of the British Columbia Hydro and Power Authority in the Columbia river treaty which is the subject of your examination.

British Columbia Hydro and Power Authority has two very important reasons for being deeply interested in the Columbia agreements.

The first is that the British Columbia Hydro and Power Authority has been designated as the Canadian entity which, if parliament approves the treaty, will be charged with the carrying out of the arrangements with the United States.

I might interject that the entity on the United States side of the line which corresponds to British Columbia Hydro and Power Authority is a combination of the Bonneville Power Administration and the Corps of Engineers.

This will be a long term and very important administrative and operational responsibility, covering a wide variety of complex duties and involving many hundreds of millions of dollars.

Our other special concern arises from the fact that as the major electrical utility in our part of Canada we are anxiously awaiting the ratification of the treaty in order to be assured of the adequate supplies of low cost power which will make it possible for us to meet our prospective obligations to the people and to the industrial and commercial life of British Columbia.

The British Columbia Hydro and Power Authority is a crown corporation owned by the people of British Columbia and engaged in the generation, transmission and distribution of electricity; in the distribution of natural and manufactured gas for domestic, commercial and industrial purposes; in the operation of metropolitan transport services and of a freight railway; and in related activities. The British Columbia Hydro and Power Authority has an installed electric generating capacity of 1.9 million kilowatts and serves 475,000 electric customers and 145,000 gas customers. Its metropolitan transit operations carry some 75 million passengers a year and its railway carries 1.6 million tons of freight. The British Columbia Hydro and Power Authority has assets of \$1 billion, employs 6,200 persons and pays annually by way of grants, fees and taxes about \$16 million.

British Columbia Hydro and Power Authority serves or will shortly be serving residential, commercial and industrial customers in all parts of the province with the exception of two major industrial complexes at Kitimat and Trail and certain areas in the east Kootenay and southern Okanagan valleys.

With the heavy electrical responsibilities indicated by the figures that I have just quoted British Columbia Hydro and Power Authority has two major problems of concern. It must be able to provide an adequate and unfailing supply of power, and it must provide this power at the lowest possible price to the consumers. It is the ultimate objective of the authority to make electrical energy available to every resident of the province who is not otherwise provided and to do this at a cost to the consumer that will be lower than the prices charged in any other province or in any state in the United States or Mexico. We believe that it may eventually be possible to achieve these objectives because British Columbia has available a greater untapped potential of readily accessible hydroelectric power than is to be found, so far as I am aware, in any comparable area anywhere else in the world. But whether we achieve them or not these are the objectives we have set up for ourselves and towards which we are aiming.

The British Columbia Hydro and Power Authority is composed of what were, prior to the end of March, 1962, the publicly-owned British Columbia Power Commission and the investor-owned British Columbia Electric Company Limited.

You will recall that the British Columbia Electric Company Limited was taken over by the government at the beginning of August, 1961.

For convenience in dealing with the plans for the development of the electrical resources of the province I shall not make a distinction between the two precedent organizations but deal with the situation as though the responsibilities now held by British Columbia Hydro had been in a single hand during the past ten years. This is not unreasonable as before amalgamation the commission and the company faced two segments of a single problem.

* * * * *

In planning for the future a public utility must look a long way ahead. A program to be technically and administratively safe, and to be economically prudent, must be devised at least five years and preferably not less than ten years in advance. It was in recognition of this principle that, in the last

few years of the decade of the fifties, British Columbia Hydro, in co-operation with the government departments concerned, examined the prospective needs of the people of the province. British Columbia was recognized as being one of the most rapidly growing areas in Canada. Its requirements for energy were rising steeply and are today still increasing at a compound rate of about $7\frac{1}{2}$ per cent a year. This means that the demand doubles every $9\frac{1}{4}$ years. It was necessary to program to meet at least this requirement and for safety to provide an additional margin.

It was obvious that in present circumstances the least expensive source of electrical energy in British Columbia would be found in falling water, and it was estimated that our undeveloped potential was at least 30 million kilowatts. A good part of this could be brought into use at a comparatively low cost.

In planning to meet the rising demand account had to be taken of the fact that the advent of nuclear energy was bringing a new element into all power calculations. Without now going into a detailed review of this subject it will be sufficient to repeat what has often been said by competent students of the problem that at some period within the present generation the cost of nuclear energy is likely to become so low as to make most other new power installations uneconomic.

In view of these facts it soon became clear that in British Columbia it would be desirable to develop every hydroelectric project, for the output of which a profitable market could be found, just as rapidly as possible. Once developed and the capital investment made, hydro plants can produce power for anything from 100 to 200 years, with no cost for fuel and with a minimum expenditure on maintenance and operation, at a price that no nuclear installation could ever match. But we had to recognize that when nuclear energy becomes competitive there are unlikely to be any large external markets which will provide profits big enough to cover the costs of new hydro developments in British Columbia.

In this connection, if members of the committee wish to discuss this a little later I have further information in respect to nuclear energy, as well as references from a senior official of Atomic Energy of Canada, with regard to the benefits resulting from our developments in British Columbia.

Our provincial authorities and utility officials gave careful study to this situation in order to decide on which major hydro projects could be developed at the lowest cost and with the maximum saleable output in the time still remaining to us.

It is possible that the Fraser could supply power at a lower cost than any other river in British Columbia. The Fraser however, in so far as its main stem is concerned, is for the foreseeable future ruled out of consideration because the fish problem has not yet been solved. Psychologically, if not economically, on the Fraser river salmon is still king.

Leaving the Fraser aside, for the present at least, the government looked at the Columbia and the Peace.

It was obvious that we would not be able ourselves to use the full power of these two great rivers immediately, and at the same time; yet if either of them was postponed its tremendous latent power might be lost forever to the people of British Columbia. But if part of this power could be sold outside the province at a substantial profit the projects would be self-liquidating and would become tremendously valuable assets for hundreds of years ahead.

It was essential, therefore, to study the markets to see if some part of the energy that could be generated by the Columbia and the Peace could be sold elsewhere in Canada or in the United States. When this was done it became clear at once that the only large external market during the next ten to fifteen years would be in the northwestern part of the United States.

If developed independently and the power used exclusively for provincial purposes, the cost of energy from the Columbia and the Peace would be roughly comparable. This conclusion was substantiated by the two firms of outstanding British consultants (Mertz and McLellan and Sir Alexander Gibb and Partners) who were brought in by the British Columbia energy board to review the provincial situation. The Columbia, however, had one great advantage that the Peace did not share. By establishing works in Canada to control the flow of the Columbia waters across the boundary into the United States, American plants could produce a large increase in output at a comparatively modest cost. This offered British Columbia an attractive opportunity to strike a profitable bargain.

As a result of negotiations carried on most effectively in the International Joint Commission, General McNaughton and his Canadian colleagues succeeded in obtaining agreement that Canada would be entitled to one-half of any benefits in any additional power that would be created downstream in the United States by controlling the flow of the magnificent but erratic Columbia waters across the border.

It was also agreed that the United States should pay Canada for any flood control benefits that would result below the boundary from Canadian management of the waters above the boundary.

In view of all these circumstances it was clear that the most prudent and profitable course for British Columbia to follow would be, if possible, to develop the potential of both the Columbia and the Peace, and to do it at once.

As it was obvious that the complicated negotiations on the Columbia would not be quickly concluded, and as the demand for power was rapidly rising, it was decided in the fall of 1961 to go ahead immediately with the Peace. It is perhaps desirable to point out that a collateral and incidental but very important aspect of this program is the fact that the construction of the vast project at Portage mountain will bring great economic and social advantages to an area of British Columbia that has not developed in the past as rapidly as will now be possible. As Mr. Williston pointed out yesterday there is a great deal of evidence to show this is already well started.

It was obviously essential for us to arrange for some new and very large source of power to be available not later than 1968. By installing generators on the Peace it would be possible to meet the provincial load growth for from seven to ten years. If, within a reasonable time, arrangements could be made with the United States for the co-operative development of the Columbia the energy resulting in the United States from the operation of the proposed storage reservoirs in Canada could be sold in the United States until it was needed by ourselves. The proceeds from this sale could be applied to reducing the cost of additional generation on the Columbia in Canada and thus bring further advantages to the British Columbia consumer. At this time and with your permission I would like Mr. Milligan to point out the load growth situation as illustrated on the chart which is set up and to show just how the planning has been designed.

Mr. JOHN W. MILLIGAN (*Reservoirs Engineer, B.C. Hydro and Power Authority*): Mr. Chairman, this chart shows the power resource development to meet the peak load growth in British Columbia and in respect of a maximum load forecast at a rate of 7.5 per cent per year increase.

You can see the existing capability hydro and thermal can meet the load requirements until about 1969-70. From there, the Peace will meet the load until about 1975 when Mica must be machined. Mica will be fully utilized by about 1980 and the remaining development of the Columbia river, will be required.

The CHAIRMAN: Is it agreed that the charts we see here today be included in our minutes?

Mr. CHATTERTON: Mr. Chairman, will copies be printed for our copies of the brief? Could that be arranged?

The CHAIRMAN: I am informed, copies have been printed, but my suggestion is that these also be incorporated in the Minutes of Proceedings and Evidence of the external affairs committee. There are many interested individuals who apparently study this evidence as it is published. Is that agreeable?

Some Hon. MEMBERS: Agreed.

Mr. DAVIS: Mr. Chairman, I should like to ask a question for clarification. The Peace river energy becomes available, according to that chart, in 1969?

Mr. MILLIGAN: Yes.

Mr. DAVIS: And it is to be used up by 1976?

Mr. MILLIGAN: The forecast shows it will be used up by approximately that time.

Mr. DAVIS: And the Mica creek energy will be required after 1976?

Mr. MILLIGAN: Yes, the chart shows Mica will be used up by about 1980.

Mr. KEENLEYSIDE: Mr. Chairman, I think Mr. Milligan will agree that these dates are slightly fluid. This all depends entirely, on how rapidly the demand for power increases. The Peace river power will become available late in the fall of 1968 and if present indications continue it is not at all impossible that its power may be used up as early as 1973. However, we counted, when we drafted this chart, on it lasting until about 1975. The Mica creek energy will carry us on for three or four years, again depending on how fast the demand for power increases.

Of the various criticisms that have been directed against the present agreement with the United States the one that is most offensive to common sense is the charge that we are selling cheap power to the United States and using expensive power ourselves. In the first place as Mr. Williston and others have indicated, Canada's share of the downstream electrical benefits would not, if brought back to British Columbia, be particularly low cost power. Even if there were a marked difference in cost it would not alter the fact that it would be unimportant which was sold provided it was sold at a profit and that the profit was used to reduce costs to the Canadian consumer. Under the present agreement the United States is to pay a price high enough to cover the cost of Peace or Columbia power generated in Canada and transmitted to the United States. By selling the downstream power benefits (which are generated in the United States) we save all costs of transmission and thus make a larger profit for ourselves.

For clarification, Mr. Chairman, it does not seem at all sensible to urge that we bring back this power that is generated in the United States, use it in Canada and then take some other power and ship it back into the United States. We will lose in half a dozen different ways by any such procedure.

Mr. BYRNE: It would satisfy the nationalists.

Mr. KEENLEYSIDE: And, of course, we are in a much better position to make a profitable bargain with the United States today than we are ever likely to be again. If we are ever going to obtain U.S. money to pay for hydro projects in Canada or at least in British Columbia, we must do it now. Mr. Chairman, I do not think it is an exaggeration to say that if we were starting fresh at this time we would not have a ghost of a chance of getting an agreement such as we are now discussing. The present agreement is infinitely better than anything we could negotiate if we were starting fresh.

This was the philosophy behind the two-river policy and the wisdom of that policy will become more and more apparent as time goes on. If other large external markets can be developed we can accelerate the construction of the other Columbia river dams and then go on to install other generating plants on other British Columbia rivers in order to exploit these opportunities. This is a scheme on which we are already at work, and with most encouraging prospects.

I am not in a position to give any details about this, but things that have happened in the last few months would seem to indicate that it may be possible to make additional sales which will result in greatly exhilarating this whole program. This is certainly not a firm undertaking, but indications are extremely encouraging.

With luck we may be able to develop a 3- or a 4-river policy.

The original Columbia treaty, while it *permitted* the sale of Canada's downstream power entitlement to the United States, was unacceptable to British Columbia because it was not accompanied by a *definite arrangement* for such a sale. The provincial government argued that if the treaty was ratified the province would be committed to proceed with the building of the dams but would have no firm assurance of a purchaser for its downstream power. The government took the position, therefore, that ratification would only be acceptable if accompanied at the same time by a specific undertaking on the part of the United States to purchase the Canadian entitlement at an agreed price, and for an agreed term.

I shall not traverse the course of the negotiations with the United States either before or after the signing of the original treaty. These matters are now of importance only to the economic and political historian. It will be sufficient to say here that the selection of the projects included in the treaty arrangement was made only after the most carefully detailed study of all the various possibilities. In the end the treaty program was approved and recommended by the technical experts of the federal and provincial governments and of the British Columbia Hydro, because in their critical opinion it constituted the best possible program for the development of the Canadian resources on the Columbia river. No other projects acceptable to the United States would give us the same combination of a maximum return from the United States and the extremely profitable generation of energy on the Canadian section of the river. A large number of possible alternatives were studied and many of them were put through detailed computer tests. In the end it was agreed by all concerned, with the one notable exception of General McNaughton, that the treaty program would, on balance, bring the greatest benefits to the economy of British Columbia, and of Canada.

The terms of the final agreement which was approved on January 13, 1964 are already well-known to the members of this Committee. They can be quickly summarized again by saying that Canada has undertaken to ensure that British Columbia will build three major dams on the Columbia river, and to use them to provide the service of a regulated flow of water into the United States in accordance with an agreed plan of operation for a period of thirty years. For that time the United States will have the use of the Canadian half as well as its own half of the extra power generated in the United States plants. Canada also agreed that the United States may build a dam at Libby on the Kootenai river in Montana in spite of the fact that this will flood some 40 miles of the southern Kootenay valley in British Columbia.

In return for these services the United States will pay to Canada—and Canada will immediately transfer to British Columbia—the sum of \$274.8 million on 1 October, 1964. An additional total amount of \$69.6 million will be paid in 1968, 1969, and 1973 as the Canadian dams come into operation at Duncan, Arrow and Mica.

This arrangement will mean that the payments to British Columbia will

1. Pay off all capital costs of the dams and reservoirs at Duncan, Arrow and Mica;
2. Pay all the operating expenses of these projects;
3. Leave a surplus of approximately \$40 million at the end of the sales contract period.

Alternatively the advantages could be stated in this way: The payments will

1. Pay all the capital costs of the storage dams as they are incurred;
2. Pay about half of the capital costs of the generators to be installed at Mica.

These arrangements will ensure that the storage projects in Canada will be debt free as they are constructed. This compares with a normal amortization period for such projects of 50 to 100 years. They will also enable a 1.8 million kilowatt installation at Mica to produce energy at less than $1\frac{1}{2}$ mills per kwh, a rate that cannot be equalled anywhere else on the continent.

The agreement will also bring the following additional benefits to British Columbia:

- (a) The installation of over 4 million kilowatts at points on the Columbia river in Canada which will produce energy at a cost of about 2 mills per kilowatt-hour. This installed capacity will be more than $1\frac{1}{2}$ times the total present hydroelectric installation in British Columbia and about $\frac{1}{3}$ of the total for all of Canada.
- (b) A reduction in the B.C. Hydro system cost of generation from just over 5 mills today to approximately $2\frac{1}{2}$ mills by the time the Columbia river in Canada is fully developed.

As members of the committee are aware, in the past we have had on the whole rather high priced power in British Columbia. In carrying out this program, by the time we get to the point shown at the top of the chart, the system cost in British Columbia without any new sales will be reduced to half of what it is at present.

- (c) The delivery of this power to centres throughout the southern half of the province at about 3 mills per kilowatt-hour.
- (d) The prevention of floods in settled areas on the Kootenay and Columbia rivers in Canada.
- (e) The receipt at the end of the 30-year contract of payments from the still continuing downstream benefits of from \$5 to \$10 million annually.
- (f) The additional payment of \$8 million by the United States for extra flood control if it is required during the treaty period as well as special flood control compensation for any emergency requirements of the United States during and after the life of the treaty.

There has been a good deal of criticism in some quarters of the fact that we are going to have to provide flood control under certain circumstances after the end of the treaty. This has been described as a great invasion of our sovereignty, and so forth. This is a subject on which I would be glad to speak a little later on, if the members of the committee are interested in hearing further about it.

- (g) The creation of a Columbia-Peace high voltage transmission network that will bring the full resources of the two great rivers within reach of all major communities in the province.

I am going to ask Mr. Milligan to show the present high voltage transmission network. The first chart is our high voltage network existing in British Columbia at the present time. As you can see, it is confined to a small area in the southwestern portion of the province. The record chart shows the high voltage network after Peace and Mica come into operation, the network will provide power to every area in British Columbia where there is any significant concentration of population or where any is likely to develop within the next decade.

- (h) The construction of the Libby reservoir by the United States which will make possible the additional annual generation of more than 200,000 kilowatt-years of low cost energy in Canada, energy essential for the continuing development of the Kootenays.

This power will become available at something like \$60 per kilowatt.

These benefits do not have to be shared with the United States. The Libby dam will also provide additional flood control to the industrial and farming areas of the West Kootenays.

During the recent negotiations full consideration was given to the various criticisms that were directed against the treaty. To the extent that these criticisms were valid I believe that they have been fully met by the clarifications and modifications set out in the protocol.

We at British Columbia Hydro believe that the treaty should now be ratified because of the extraordinarily favourable sales contract that is, in effect, a part of the agreement. We are supported in this view by the studies of our own staff, by the results of the long and careful work done by the officials of the provincial and the federal governments, and by the unanimous opinions of our distinguished consultants.

So much for the past. With your permission, Mr. Chairman, I should now like to outline the steps that we in the British Columbia Hydro propose to take if parliament approves this treaty and the exchange of ratifications with the United States is effected.

Our first duty will be to get the various projects under way because as the hon. members know, there is a time limit applied to each of the three treaty projects—4 years for Duncan, 5 years for Arrow, and 9 years for Mica.

These dates begin on April 1 of this year so we are already encroaching upon our time limit.

Because of the delays that have taken place since the treaty projects were first selected we have been able to make a good deal of progress in the elaboration and refinement of our design and construction plans, and in our program for the solution of the human and personal problems that will arise from flooding in the Arrow lakes region.

If members of the committee wish me to do so I would later be prepared to describe the kind of community arrangements that will have to be made at the various dam sites.

As a result we anticipate no serious difficulty in meeting the dates set out in the agreement. In fact the situation is a good deal easier than it would have been had the treaty been ratified three years ago. However, we have no intention of taking any chances or of allowing any delay to place any one of the projects in even the most distant jeopardy.

We have been and are being assisted in our work by what is certainly one of the most distinguished arrays of expert consultants ever brought together on one program of this kind in Canada.

On the Mica dam we are being advised by a consortium consisting of H. G. Acres and Company Limited, G. E. Crippen & Associated Ltd., and the Shawinigan Engineering Co. Ltd.

Mr. Chairman, may I say that the president of Caseco had hoped to be able to accept an invitation from the committee to appear. Unfortunately,

he has had a rather serious operation and is not going to be able to appear, but he has given me a letter which he asked me to present to the committee. If it meets with your approval, I would be glad to read that letter some time later in the morning and have it put into the files.

The CHAIRMAN: It is agreed.

Mr. KEENLEYSIDE: C.B.A. Engineering Co. Ltd., who are our advisers on the Arrow dam, have in their background the experience of an outstanding group of Dutch engineers, and led by a number of Canadian experts, including two men who successively occupied the post of chief engineer of the Ontario Hydro and one of whom was ultimately the chairman of that great organization.

The Duncan project is being developed with the assistance of the Montreal Engineering Company Limited.

The expertise represented by the men engaged on these three projects is drawn from the consulting firms that have been responsible for nearly 90 per cent of all the hydroelectric installations constructed in Canada since the second world war.

In addition to the consulting firms to which I have referred special technical advice has been obtained in connection with each of the dams from independent experts of world-wide reputation, men who are acknowledged by their professional colleagues to be at the very top of their respective fields of specialization. These include experts in geology, soil mechanics, dam design, hydrology, architecture, lock construction and many other fields. Architectural experts were brought in to assist in the design of the High Arrow dam to make it as pleasant a landscape as possible. If you examine the pictures you will agree that they were successful in their work.

Mr. Chairman, I have prepared a list of the consulting firms with their senior officers, and of all the specialist consultants who have been used by these firms at our request in connection with this work. If members of the committee would like to have more copies of this list, we would be glad to distribute them.

The CHAIRMAN: It is agreed.

Mr. KEENLEYSIDE: Finally, we are arranging to have all our plans given a last critical review by a board consisting of five men whose accomplishments are known and respected wherever engineering skills are recognized and appreciated. Because of the special interest of the United States in this program, and because of the exceptional qualifications of the men themselves some members of this panel are from the United States. It was suggested because we went outside of Canada to get outstanding experts to look at the Peace Project and because we are doing the same thing again on the Columbia, that we do not trust our own experts and that we are denigrating the quality of expertise in this field in Canada. This of course is complete nonsense. The fact is that we have in Canada some of the best experts in this field in the world. However we think that in addition to our own engineers, it would be appropriate to bring in men with special qualifications from other parts of the world so that we can get a complete and final opinion. No good engineer has ever objected to having another good engineer taking a look at what he is doing and discussing it with him; and that is exactly what we are proposing to do here. The fact that we are putting one or more United States representatives on the board is in line with what I think Mr. Pugh mentioned last night about the advantage of ensuring, that somebody from the United States knows what is being done.

In fact, the United States authorities know exactly what we are proposing to do in regard to designing and constructing these dams.

I think it might be of interest to the members of the committee to know that one of those specialists we have asked to join in the work of this final

board of review is a man who was at one time the Chief Engineer of the United States Army, a man who worked on the Columbia for a long time, and who for about 12 to 15 years has been the chief adviser on water and power matters to the world bank. He has been called in to work in a variety of countries all over the world. He has agreed to come and help us by taking, along with other experts including Canadians, a final look at what is planned here.

In addition to all this, our programme is being subjected to the most intensive scrutiny by the department of water resources of the provincial government, who have brought in additional experts of international reputation to assist in their examination.

As a result of all this checking and rechecking I think that I am justified in stating that no other construction programme in Canadian history has been more carefully prepared.

Having made arrangements for the design and construction, for the efficiency and safety, of the Columbia projects our other major concern is the welfare of the people who are going to be affected by the flooding of the reservoirs, and in particular those living in the area above the Arrow lakes dam.

Here we have said from the beginning, and in this we have had the full support of the British Columbia government, that we propose to treat these people fairly, sympathetically and generously. This is particularly true of those who are no longer young and who in some cases have lived for most of their years in the neighbourhood which is now to be disturbed. We shall do everything that can reasonably be done to ensure that those who need help obtain it. Special provision will be made for individuals, for private organizations, and for public bodies whose property will be adversely affected. The provincial government has undertaken to waive its rule against the alienation of lake front property to allow for the resettlement of persons who will have to move from their Columbia Valley homes and who wish to re-establish themselves on lake shore property somewhere else in the province.

Shortly before coming to these hearings I had a final discussion with Premier Bennett, to whom this matter is a problem of great concern. He authorized me again to say that the provincial government was entirely behind the British Columbia Hydro and Power Authority in working out a fair, reasonable and generous program for the people I have been discussing, and particularly for those people of some age who in normal circumstances, naturally would not want to move from the homes in which they have lived so long.

For three years a special organization established within British Columbia Hydro has been working on over-all redevelopment plans and we have recently appointed an outstanding regional planner with training and experience in Great Britain, in the Tennessee valley development, and as executive head of the lower mainland regional planning board of British Columbia to act as the coordinator and director of our program for the maintenance and improvement of conditions in the Arrow lakes region. It will be his duty to assist us—and of course the provincial government departments concerned—in the application and when necessary the supplementing of the plans we have already made, or about which we are still in negotiation with the provincial authorities. The coordinated program that will be instituted in the affected areas, if parliament approves the treaty, will involve not only the relocation of roads, railways and bridges, and the movement or replacement of dwellings, commercial establishments and public facilities. It will also include plans, so far as this is feasible, for the preservation or improvement of the present recreational and tourist facilities. Outside experts have prepared studies of the economy of the Revelstoke area and of the practicability, including the acceptability, of establishing

a model village community for the benefit of people who have previously been living in isolated areas or in centres which will now be inundated. The over-all and ultimate result of the Columbia program should be a major strengthening of the social and economic values of the region.

All these things await the action of parliament. If the treaty is approved the plans will become action programmes.

These preparations are not, of course, to be interpreted as meaning that we are going to deal extravagantly or carelessly with the money that is entrusted to us. We will certainly not be prepared to meet all the estimates that some of those who are disturbed are likely to attach—either sincerely or as bargaining gambits—to the properties that are affected. Some expectations will be disappointed. We shall deal fairly, but no more than that, with persons—chiefly I am informed from the neighbouring states—who have acquired properties within the last three or four years with a view to selling out at a heavy profit to a sympathetic Authority. And it is no kindness to any of the people of the region to arouse hopes that they will be compensated for values that do not exist. No one need expect that by valuing his property at fifteen times what an expert assessor says it is worth he will profit accordingly, as was done in one case.

Perhaps I should add that if it turns out to be true, as has been reported, that certain properties have recently changed hands at announced prices that are far in excess of what was actually paid the persons concerned will not succeed in any such attempts to rig the market.

In examining the problem as a whole, and giving full recognition to the distress that will be caused in many individual cases it is essential that we should maintain a sense of proportion in these matters. The Arrow lakes constitute on but only one of a series of beautiful lakes that parallel the mountain ranges of the interior of British Columbia. The Okanagan, the Kootenay, the Slokan and a vast number of others of British Columbia's twenty-one thousand lakes will remain untouched. Moreover, the total population of the Kootenay Columbia area runs well over 100,000 and of these not much over 2,000 will be disturbed. Now I know, of course, that this will not make it much easier for the people who will have to move but what is being proposed is not the all-inclusive calamity that some of the critics have seemed to suggest.

Of the people who will be directly affected we believe, in fact we know, that a good many would have sold out long ago if purchasers had been available. Some of them are now looking forward to receiving a fair price for their possessions and then to moving away to join relations, or to live in a milder climate, or to re-establish themselves in or near some larger community.

Others will wish to have their houses moved a short distance away from the flood line but to remain in the neighbourhood they know so well. Still others hope to obtain a piece of land elsewhere on the Arrow lakes or on some other lakeshore in the interior of the province.

Mr. Fleming raised the question about the Revelstoke situation last night and it might perhaps be well to note that we have had a special economic study made of the Revelstoke region by the B.C. Research Council and we have had a number of discussions. In one talk about a month ago, with the Board of Trade and the town council in Revelstoke in which I participated, we discussed their problems and how they might take advantage of the tremendous opportunities that are ahead of them. Revelstoke could become the gem of the Rocky mountains, if it would only seize the opportunity to build on small nucleus it has there now. It must consider the kind of facilities, buildings, homes and hotels that would be best suited to that area and adapt their planning to take proper advantage of their opportunity.

Revelstoke has a magnificent opportunity in having one of the most beautiful natural parks in the world, and one which differs considerably from other parks in the Rockies such as Banff and Jasper. It has one of the most charming

little rivers in the world in the Illecillewaet. During the tourist season Revelstoke will have, under full lake flooding, a lake that comes right up to their doorstep and on which it would be quite possible to develop yacht clubs and similar facilities. In addition high mountains exist behind the mountain on which Revelstoke park is situated, and running through the city is one of the most magnificent rivers in the world. Therefore there is an incredible opportunity there if Revelstoke will only take advantage of it. I know of no city in the mountains of Europe—and I have seen most of them—that has the benefit of the natural advantages that Revelstoke has.

There is much more that might be added to what I have said in this brief presentation but perhaps the members of the committee would prefer to have me stop here and allow other matters to be brought out in the course of discussion. I shall be glad to answer questions or to enlarge on any of the matters that are of special concern to any of the hon. members.

I shall conclude by saying again that I greatly appreciate the opportunity to appear before this distinguished committee and to present my views on this matter which is of such great importance to our country.

Mr. DAVIS: I think Dr. Keenleyside is to be congratulated on the clarity of his presentation and also on his description of the impressive array of competent people which his authority has consulted in respect of this important development. I think also that those people who are likely to be affected particularly in the Arrow lakes valley will take some comfort from the assurance he has given to us in his paper today.

There are several statements in his paper that I would like to ask him about. One which is particularly impressive is at the top of page 2, in the second paragraph, and it reads as follows:

British Columbia Hydro has two major problems of concern. It must be able to provide an adequate and unfailing supply of power, and it must provide this power at the lowest possible price to the consumers. It is the ultimate objective of the authority to make electrical energy available to every resident of the province who is not otherwise provided and to do this at a cost to the consumer that will be lower than the prices charged in any other province or in any state in the United States or Mexico.

I would like to ask one or two questions with respect to rates. I have been looking at the latest publication of the dominion bureau of statistics entitled "Electricity Bills for Domestic, Commercial and Small Power Services", and I note that in respect of residential service for example, there is no other major city in Canada paying higher power bills than Vancouver, with the single exception of Charlottetown, Prince Edward Island. And also in respect of commercial service rates, the rates appear to be very high. Would it be a fair statement that the rates currently in effect in British Columbia are high rates?

Mr. KEENLEYSIDE: Yes, I think it is a fair statement to say that the rates presently charged in parts of British Columbia are high rates. I would be glad on another occasion to go into the historical reason for this in the city of Vancouver and its environs. We do not want to get into a discussion of private and public power I presume.

Mr. DAVIS: The average cost of generation and transmission currently on the historical development sites is very high and because of the power in respect from Mica creek, the cost I assume will be more than paid for by the ratepayers, and it should be very low.

Mr. KEENLEYSIDE: The cost of power in the thickly populated areas in British Columbia is high in comparison with thickly populated areas in other

parts of Canada, but I should enter a caveat to point out that the power in the outlying or isolated areas is low in comparison with similar areas in other parts of the country.

Mr. PUGH: In the Okanagan in the part served by West Kootenay, are their rates not immeasurably lower than elsewhere?

Mr. KEENLEYSIDE: Yes, the rates that are charged by West Kootenay are very low indeed in comparison with other rates in the province. Here again there is an historical explanation for it. They constructed their power plants and paid for them at a time when money was very cheap, and when labour cost was very low. Therefore they are in a fantastically favourable position.

Mr. HERRIDGE: Is the basic reason not the fact that in the low cost power sites served by West Kootenay, only three or four per cent of their total production goes into consumer uses, and that this is considered policy by the company in the district concerned?

Mr. KEENLEYSIDE: I think a representative of the Caminco organization will be here and I would rather have him reply to your question than try to do it myself.

Mr. HERRIDGE: You have already given us the reason for the low cost power. It was your reason.

Mr. DAVIS: I would like to say a word about the order of magnitude. I think in Mr. Williston's statement we have heard that the average cost of generation and transmission is actually in the order of ten mills per kilowatt hour in British Columbia.

Mr. KEENLEYSIDE: Just over that.

Mr. DAVIS: But having regard to the power of Mica creek the rate will be in the order of from 1 to 1½ mills on Mica creek. Could we be given some indication of what the delivered cost might be at all?

Mr. KEENLEYSIDE: Delivered cost in Vancouver and other areas in the southern part of the province will be, as far as I can tell now, 3 mills or just under 3 mills.

Mr. DAVIS: Therefore the impact which this would have on the rate structure should be very favourable indeed.

Mr. KEENLEYSIDE: Yes.

Mr. DAVIS: What is the order of magnitude of capital outlay necessary in order to bring that power in on site and generation at Mica and the transmission at low centres? Have your experts any estimate as to the order of magnitude of the investment to make use of on site resources at Mica creek after the treaty obligations have been fulfilled?

Mr. KEENLEYSIDE: In general terms the cost of generation will be about \$100 million, but the cost of transmission would depend on the scheme of development. For instance, whether to build a new line all the way into Vancouver, or to tie into the Kamloops line, or to make a major connection tying Mica and the Peace river together roughly at Lillooet, and whether you charge it all against Mica.

Mr. DAVIS: Could we have an impression of the estimated cost of an independent line, for example, from Mica creek to Vancouver?

Mr. KEENLEYSIDE: Mr. Kennedy, who is our expert on these things, says it will be less than \$100 million.

Mr. DAVIS: In other words, in bringing in Mica creek you would add generators as you need them. The first \$100 million might be spent in lumpsum of \$25 million, and you would have a transmission line of \$100 million. This could rise to \$200 million. Is that the sort of capital outlay we are thinking about?

Mr. KEENLEYSIDE: In the light of what presently is happening, we are going to have to put in those generators just about as soon as we have completed construction of the dam, and they will come in one after another. There will not be a long drawn out delay in which we have to pay a great deal of money in interest on transmission facilities, and so on.

Mr. DAVIS: The point I am working towards is a comparison of this cost with the cost of power from the Peace river. In what order of magnitude would it be delivered in Vancouver?

Mr. KEENLEYSIDE: Delivered in Vancouver, roughly four mills. It may be a bit less than that because of the fact that we are getting some of the contracts at lower rates than we expected. Also, as Mr. Williston pointed out, that, in talking about four mills, we are speaking of a very heavy series of transmission lines down the centre of the province.

Mr. HERRIDGE: I have a supplementary question. What is the estimated cost of delivery of Mica power at Vancouver?

Mr. KEENLEYSIDE: In the order of $1\frac{1}{2}$ mills.

Mr. DAVIS: I think you said $2\frac{1}{2}$ to three mills delivered at Vancouver.

Mr. KEENLEYSIDE: The generation cost is $1\frac{1}{2}$ mills. The transmission cost will be between one and $1\frac{1}{2}$, so the total cost of generation and delivery in Vancouver will be just under three.

Mr. HERRIDGE: From Mica?

Mr. KEENLEYSIDE: Yes.

Mr. HERRIDGE: Does this mean that the consumers of the coastal area will be paying some \$300 million or \$400 million extra in power rights during the 30 years of the treaty.

Mr. KEENLEYSIDE: I do not see the argument. We have to have power from some place, and if we do not get it from Mica and the Peace, we will have to get it from some place else and pay more for it. I do not understand the argument.

Mr. FLEMING (*Okanagan-Revelstoke*): In relation to the statements of Dr. Keenleyside and Mr. Williston, what is the estimated delivered cost of downstream power at the border, say at Oliver, in relation to the cost of generation at Mica? If you were bringing the downstream benefit power back to British Columbia, what would be the cost at the border?

Mr. KEENLEYSIDE: At the border or delivered to a load centre?

Mr. FLEMING (*Okanagan-Revelstoke*): At the border first, at Oliver.

Mr. KEENLEYSIDE: I will ask Mr. Kennedy to answer that.

Mr. W. D. KENNEDY (*Manager, Economic and Commercial Services Division, British Columbia Hydro and Power Authority*): It depends upon whether you consider it over the 60 year period or the 30 year period. If you take it over the long period—and leaving out the recent sales agreement, the costs would be relatively high. I do not have the exact figures, but certainly in the order of four or five mills.

Mr. PUGH: Why?

Mr. KENNEDY: Because of the fact of the declining downstream benefit.

Mr. FLEMING (*Okanagan-Revelstoke*): What about the 30 year period?

Mr. KENNEDY: I do not have that with me.

Mr. DAVIS: Could I have further clarification in respect of the four mill figure for the Peace river; is that the estimated long term cost?

Mr. KEENLEYSIDE: Yes.

Mr. DAVIS: What capital outlay is necessary on the Peace river before any energy is available, let us say in the Vancouver area, from the Peace river?

What is the minimum capital outlay of the Peace river before the project can be commenced and delivery completed to Vancouver? What expenditure has to be made, for example, to complete the dam at Portage mountain and to build the transmission to Vancouver, and the first generators? Is it in the order of \$450 million and \$500 million?

Mr. KENNEDY: The total cost of the first stage of the project including transmission is in the order of \$700 million. This is split roughly between half for the dam and generators and half for the transmission. These are approximate figures. You have to understand that we would do this in stages, anyway. Also, to be realistic, you have to tie this into our existing transmission system. I do not have the details of the cost of each stage of the Peace development, but certainly you would have to include the cost of the dam and then be specific and say what stage of development you are talking about.

Mr. DAVIS: To get initial production from Mica creek I understand would cost something less than \$200 million?

Mr. KENNEDY: If you have the storage project paid for.

Mr. DAVIS: To get initial delivery from the Peace river may cost several times that amount.

Mr. KENNEDY: I am not sure we are arguing about the same thing. I think you have to preface all this by saying that your storage is paid for by the sales agreement.

Mr. DAVIS: This is another point I would like to bring out. The treaty and the sales agreement more than pay for the dam at Mica creek?

Mr. KENNEDY: Correct.

Mr. DAVIS: Whereas the Canadian consumer has to pay for the dam at Portage mountain?

Mr. KENNEDY: Yes.

Mr. DAVIS: Together with longer transmission; so, the power from Mica creek will be cheaper?

Mr. KENNEDY: After this sale agreement.

Mr. DAVIS: Considerably cheaper than from the Peace river?

Mr. KENNEDY: Correct.

Mr. DAVIS: The only question which rises in my mind is, would it not be possible somehow to stage this arrangement so that the much lower cost development comes in in earlier staging and has an earlier affect on the power rates.

Dr. KEENLEYSIDE: Yes. If we had been able to make an agreement of the kind we now have with the United States in 1960.

Mr. DAVIS: In other words, it would be physically possible to complete the Mica creek project in time to meet the projected requirement?

Dr. KEENLEYSIDE: Starting now?

Mr. DAVIS: Starting under the situation as we see it.

Dr. KEENLEYSIDE: It would be quite impossible unless done under a crash program which would be expensive and stupid.

Mr. CHATTERTON: Is that because of the physical limitation?

Dr. KEENLEYSIDE: The cost of everything would go up if you are doing it as a crash program. In addition, you only could speed it up by a relatively short period of time because of the time it takes to get the units constructed. Even if we put in 100,000 men to work with all the big equipment that could be found to build the dam, that would not speed up the construction of the units.

Mr. DEACHMAN: But you do not propose to build the turbines concurrent with the building of the dam; this is to come in at a later stage as the power is needed.

Dr. KEENLEYSIDE: The turbines take about three years to construct. We will have to judge, when we get within three or four years of the completion of the dam, whether we should have one turbine ready immediately on the completion of the dam, or two or three, or none at all.

Mr. DEACHMAN: Will the penstock and power house and the bases for the turbine be poured in cement with the dam construction?

Dr. KEENLEYSIDE: They will all be put into the dam as it is constructed.

Mr. DEACHMAN: So, the question of the turbines will arise during the course of construction; that is, whether you would bring those in and bring in power at that time.

Dr. KEENLEYSIDE: Yes, sir.

Mr. DEACHMAN: How long does it take to construct a power line from the dam until you connect with the Fraser valley or Vancouver power lines; when would you have to make a decision in respect of that construction?

Mr. KEENLEYSIDE: Mr. Kennedy says you would have to start planning at least one year and a half ahead, and that the putting up of the towers and the stringing of the wires would take six months to a year.

Mr. KINDT: How many turbines in your full development do you anticipate at Mica?

Mr. KEENLEYSIDE: Ten.

Mr. DAVIS: Mr. Chairman, I have one other question which relates to the lead sentence of the last paragraph on page 5, which reads as follows:

If developed independently and the power used exclusively for provincial purposes, the cost of energy from the Columbia and the Peace would be roughly comparable.

I think this conclusion followed from the studies submitted to the British Columbia energy board, and it did not contemplate at that time the sale of the downstream benefits.

Mr. KEENLEYSIDE: No. This was in reference to the construction of one or the other for domestic purposes in British Columbia alone, not taking into account the sales or any sales in the United States.

Mr. DAVIS: In other words, the projected at site and delivered costs, which now have been referred to in other evidence, are the lower level costs because of the financial assistance resulting from the sales agreement set out in the protocol, and the average cost of power to the consumer from the Columbia development now will be lower than the comparable cost.

Mr. KEENLEYSIDE: Yes. The comparative figures in Vancouver will be roughly 4 mills if we developed Mica for domestic use alone without any connection with the United States, and 3 mills, developing it under the treaty project.

Mr. PUGH: You are not suggesting, are you, Dr. Keenleyside, that Mica be built alone; this is in respect of the whole system.

Mr. KEENLEYSIDE: No; the whole system, yes.

Mr. PUGH: It has been suggested by certain authorities that possibly Mica could be built alone which thereby would satisfy the treaty; is that correct?

Mr. KEENLEYSIDE: No, it is not at all correct. In the first place, you could not meet the demands of the treaty arrangement in the United States; and, secondly, if we had Mica alone used in the context of the treaty we would get very little generation out of it.

Mr. PUGH: The reason I asked the question is that I read about this and I was just wondering what your opinion would be.

Mr. KEENLEYSIDE: Yes. This has been said over and over again but it is not true.

Mr. DAVIS: The report to the British Columbia Energy Board dated July 31, 1961, in comparing the Columbia-Peace river power drop, indicated the cost of power from the Peace and Columbia would be comparable. The Columbia which was costed under that study was a Columbia which was completely developed in which the downstream benefits were brought back to Canada. Is that correct?

Mr. KEENLEYSIDE: Yes.

Mr. DAVIS: We now have a new set of circumstances, a sales agreement in which the United States pays for three major dams and the cost of Columbia energy to Canadians is thereby considerably reduced.

Mr. KEENLEYSIDE: Yes, cut in half.

The CHAIRMAN: Have you a question, Mr. Macdonald?

Mr. MACDONALD: Mr. Chairman, I have a series of questions, the first of which is in respect of some of the questions which were put to Mr. Williston and Mr. Bonner last night with regard to labour arrangements for the construction, which were quoted in particular on March 5 in the House of Commons debates. The member for Kootenay West suggested that the British Columbia Hydro and Power Authority would be entering into labour relations without any consultation whatsoever with Canadians, and that caused some consternation at that time. Have you any comments in that respect and have you any statement to make in respect of the general arrangements discussed last night?

Mr. KEENLEYSIDE: Mr. Chairman, I read that statement which was made in the House of Commons, of course, and I wonder if, on further consideration and having checked his source again, whether the hon. member for Kootenay West would not like to withdraw what he said in the House of Commons because it is so obviously inaccurate.

Mr. HERRIDGE: Mr. Chairman, I have a supplementary question.

Would Dr. Keenleyside explain the arrangements with the contractors in connection with this construction.

I have a draft agreement here which reads in the opening paragraph: "This agreement is made and dated for reference"—and then there is a blank—and then follows: "city of Vancouver, province of British Columbia, between contractor", and then: "Columbia Hydro Contractors Limited, 970 Burrard St. Vancouver 1, British Columbia."

Would Dr. Keenleyside explain what this is and, in his consideration of this agreement, did he deal with the United States labour official from New York or Washington prior to dealing with any Canadian labour organization?

Mr. KEENLEYSIDE: Mr. Chairman, Mr. Herridge made some very emphatic, very definite and clear statements in the House of Commons about this, saying that we had done this and had done that, and I do think we ought to start this now by having him withdraw what he said in the House of Commons, as he is now asking for information on the subject.

Mr. HERRIDGE: Well, I am not here to be questioned, Dr. Keenleyside. I made those statements based on information which was given to me.

The CHAIRMAN: Gentlemen, I think there certainly would be some confusion on the part of any person reading these minutes to ascertain what we are discussing.

Mr. MACDONALD: Mr. Chairman, perhaps I can assist by reading the offending passage at page 602 of *Hansard*, and I quote Mr. Herridge as follows:

I have a document in my hand. It is an agreement, drafted but not signed as yet, between the British Columbia hydro authority and an organization known as the Columbia Hydro Contractors Limited. This draft agreement is intended to cover all the workers who will be employed in the erection of the dams, and the construction of the generating facilities and transmission facilities on the Columbia river, should that development go ahead. This draft agreement is not the result of a consultation with Canadian citizens. It covers years of work that may be undertaken by Canadian workers and was drafted as a result of a meeting between the officials of the British Columbia hydro authority and a Mr. Keenan an A. F. of L. official in the building trades section in Washington.

I think that gives the substance of it. Continuing on at page 603 Mr. Herridge says:

This draft agreement establishes conditions under which Canadian workers will obtain employment on government projects on the Columbia before a man is hired on the job or work is commenced, and we say it is time Canadians were consulted, by public authorities.

Mr. HERRIDGE: The only inaccuracy in the record is the omission of the words "I am informed". These words should have been included.

At this time would Dr. Keenleyside explain what is happening in respect of the negotiations?

Mr. KEENLEYSIDE: I would like to add one further sentence to what Mr. Macdonald read, at the point where an hon. member interjected with the word "shame", and then Mr. Herridge went on to say:

"You have no idea what a storm this is creating among some of our Canadian trade unionists in British Columbia. This draft agreement establishes conditions under which Canadian workers will obtain employment on government projects on the Columbia before a man is hired on the job or work is commenced, and we say it is time Canadians were consulted by public authorities."

Mr. Chairman, I am sure, of course, that the hon. member did not wish to mislead the members of the House of Commons but his information obviously came from unreliable sources because almost every statement of fact in the quotation that has been presented is inaccurate and the inferences which are drawn from it, in consequence, are equally inaccurate.

Mr. Chairman, I would like to draw the attention of members of this committee to some aspects of this because I feel very strongly about it. We are being accused here of having made a deal with the authorities in the United States, disregarding Canadian labour and, on the basis of a deal with the United States, Mr. Herridge is implying that we are treating Canadian labour badly. Now, this is something that we, as Canadians, are not prepared to take.

Mr. Herridge said, "I have a draft agreement in my hand". Incidentally, there is a rather reminiscent sound to those words.

I have a document in my hand. It is an agreement, drafted but not signed as yet—

As a matter of fact, it was signed two years before Mr. Herridge made that statement.

He then goes on to state:

—between the British Columbia hydro authority and an organization known as the Columbia Hydro Contractors Limited.

That name is wrong. He then continues as follows:

This draft agreement is intended to cover all the workers who will be employed in the erection of the dams, and the construction of the generating facilities and transmission facilities on the Columbia river, should that development go ahead. This draft agreement is not the result of a consultation with Canadian citizens.

That statement is incorrect. He then stated:

It covers years of work that may be undertaken by Canadian workers and was drafted as the result of a meeting between the officials of the British Columbia hydro authority and a Mr. Keenan, an A.F. of L. official in the building trades section in Washington.

That is completely incorrect. Then Mr. Herridge continued and said:

You have no idea what a storm this is creating among some of our Canadian trade unionists in British Columbia.

This arrangement was submitted to the labour relations board. It was given their approval. There was not one complaint from any labour organization in British Columbia.

Mr. Herridge then ends up, as I said before:

—we say it is time Canadians were consulted—

Mr. Chairman, I propose to place the facts of this case on the record.

When it was decided that we were going to go ahead with the Columbia river project, if the government approved, the members of the Power Commission in 1960 discussed the experience that had been recorded in the work that had been done by Ontario Hydro on the St. Lawrence and at Niagara. We were informed by a member of our staff, who had participated in the Ontario work at that time, that an arrangement had been made by which the contractors who were working on the job formed one organization which dealt with one other organization which represented all of the unions that were likely to be employed on the job. Then these two organizations worked together in order to do what they could to ensure that there would be good conditions for labour working on the jobs, and that there would be no strikes that would interfere with construction. We in British Columbia had very much in mind the unhappy experience at Kitimat and one or two other places where strikes and labour troubles had caused delays and added expense to construction. We wanted to avoid that if we could. Having in mind the Ontario Hydro experience, we decided that we would do something about this and try to introduce in British Columbia the same principles that had worked so well for Ontario Hydro and the labour unions with whom they and the contractors dealt on the St. Lawrence and at Niagara.

In the discussions of the Power Commission the question came up "How should we go about this?" We knew we were going to be dealing largely with international unions and we wondered whether we should go to the headquarters of these unions and discuss the situation with them. We felt that if we were going to get a good agreement at some stage we would have to discuss the situation with the top officials of these unions which meant, in effect, the Building Trades Department of the A.F. of L.-C.I.O. in Washington.

The members of the Commission wondered whether or not it would be possible to bring this arrangement more under Canadian auspices rather than to deal entirely through the headquarters of the international unions. I was not sure about this, but I was very much interested in it because I have always had a good deal of concern about matters of this kind and particularly, to the extent that it was possible, I wanted to see things handled under Canadian auspices.

I decided that I would phone the headquarters of the C.L.C. in Ottawa and ask for advice. On September 2, 1960, I did telephone a vice president of the C.L.C. in Ottawa and told him what we wanted to do. I pointed out that, of course, we realized we were going to have to deal with international unions but that our desire was to keep this as much a Canadian activity as possible.

The vice president with whom I discussed this expressed his appreciation of the interest we were showing in attempting to Canadianize the job. He proposed that I come to Ottawa and meet with the two people in the organization who were the most knowledgeable about the situation and who would be able to give us the most help and the best advice. He set up the meeting for me with Mr. Donald MacDonald, who was the secretary treasurer of the C.L.C., and Mr. Bill Dodge, executive vice president of the C.L.C.

I came to Ottawa and spent the larger part of a Saturday afternoon with these gentlemen.

Mr. MACDONALD: I wonder whether Mr. Keenleyside would tell us who was the vice president to whom he has referred?

Mr. KEENLEYSIDE: Mr. Chairman, I am coming to that information but I should like to emphasize that from the beginning we acted on the advice we received from this vice president, with whom I spoke in the first instance, and from the secretary-treasurer and executive vice president, both of whom I have named. From the beginning to the present time the labour arrangements that we have made have been the result of the advice we received at that time. The person to whom I talked at the beginning—the vice president—is a man well known to the members of this committee and particularly to Mr. Herridge. This vice president was Mr. Stanley Knowles.

Mr. Chairman, I should like to give you further information. I do not know whether I will be permitted, just as an illustration of our point of view, to read from a memorandum I presented to the members of the Power Commission after my discussions with these people in Ottawa, but I should like to do so if that is permissible.

The CHAIRMAN: Are the members of this committee agreeable to this request?

Some hon. MEMBERS: Agreed.

Mr. KEENLEYSIDE: I should like to quote from a report which I gave to the members of the Commission after coming back from Ottawa following my discussions with Mr. MacDonald and Mr. Dodge of the C.L.C.

I stated:

In the course of my exposition I said that in dealing with this matter, we at B.C. Hydro might have gone directly to the building trades department of the A.F.L. and C.I.O. in Washington as this department still operates directly in Canada.

I told MacDonald and Dodge that I was aware that Mr. Haggerty had been recently been made the head of the department in Washington and that I had considered starting discussions directly with him. My colleagues and I had finally decided, however, that we would like to place as much emphasis as possible on the fact that this is a Canadian problem and that we should, to the extent that it is feasible, work through Canadian channels. It was for this reason that we had decided to bring the matter to the attention of the Canadian Congress of Labour before getting down to detailed discussion with the Building Trades Department of the A.F.L.-C.I.O. in Washington.

MacDonald and Dodge received my representations with obvious satisfaction and said that they were most appreciative of the action of the Commission in bringing the Canadian organization into the picture as a first step.

Mr. Herridge said we started discussing this with United States representatives before we discussed it with Canadian representatives, and particularly that we discussed it with a Mr. Keenan. We never discussed this with Mr. Keenan at all. He has never been in the picture at any time. Our first step was to talk to Mr. Stanley Knowles. Our second step was to talk to Mr. MacDonald and Mr. Dodge. Our third step was to talk to the deputy minister of labour of British Columbia. Our fourth step was to talk to Mr. Russell St. Eloi and Mr. Harold Taft, respectively the president and secretary of the Vancouver building trades congress.

After taking these four steps then for the first time we made contact with Mr. Haggerty of the A.F.L.-C.I.O.

Mr. Haggerty came out to Victoria. He discussed the situation with us there. At that time Mr. Dodge and Mr. MacDonald were present as was Mr. Kennedy who was the Canadian representative of the A.F. of L.-C.I.O. building trades department.

Subsequently we had correspondence with Mr. Haggerty in Washington. Copies of that correspondence were sent to the C.L.C. and copies of everything that we wrote to Mr. Haggerty in Washington were reported to the C.L.C.

I could go on and give you a whole lot more information but I think what I had said is adequate to meet the particular accusation that we were selling out to the Americans.

Mr. DEACHMAN: May I ask you one question? I find it extremely difficult to believe that there is no communication between Stanley Knowles and the other members of his party and that something like this, dealing with the C.L.C., which is so closely connected with that party, has not been communicated to them. Could the witness explain how such a thing could have taken place, if it did take place at all?

The CHAIRMAN: I know that our friend from Kootenay West is as zealous as anyone else in the House of Commons about making sure that the truth, particularly respecting any person and his reputation, is always protected. I am sure he would be as grateful as any one of us for this explanation.

Mr. HERRIDGE: I just want to say that I was not informed of any of these talks with the C.L.C. However, it is obvious from Dr. Keenleyside's explanation that the negotiations and the details of the negotiations with respect to this contract were carried on between the British Columbia Hydro Authority and this United States representative. I want to say emphatically as a Canadian that I object to agreements being drawn up that will affect the lives of Canadians over a long period of construction with a person outside this country. I think these discussions should have taken place directly with the representatives of these organizations in Canada.

Mr. BYRNE: I wonder if the hon. member would try to inform the chairman of the board what steps he should take now to negotiate only with Canadians under the constitution of this union. He should explain that, instead of making blind statements. Give us some reason, Mr. Herridge.

Mr. HERRIDGE: I am expressing my opinion and the opinion of a number of other people who have written me about this question.

There is a point which I should like to make with reference to the fact that the name is wrong. It should be the Columbia Hydro Constructors Limited. Apparently it was a typographical error in *Hansard*. Could you tell us, Dr. Keenleyside, whether the name of this company is Columbia Hydro Constructors Limited?

Mr. KEENLEYSIDE: Yes, sir.

Mr. HERRIDGE: Would it be possible to have this document included in the proceedings of the committee?

The CHAIRMAN: Have you had this document identified, Mr. Herridge? Is there any reason why it should be included?

Mr. HERRIDGE: A number of persons are interested in the terms of this contract.

Mr. KEENLEYSIDE: Perhaps I might make a further comment. Mr. Herridge suggested we should disregard the constitution of the trade unions with which we have had to deal. I pointed out that we talked not only with the Canadian Labour Congress but also with the Canadian representatives in British Columbia, the heads of the unions in British Columbia with whom we will have to deal. I do not know how we could have done anything more to make this a Canadian show than to deal with the Canadian Labour Congress first and then to deal with the Canadian heads of the international unions in British Columbia. What else do you want us to do?

Mr. HERRIDGE: I am suggesting that I would much prefer to have seen you discuss the details of the contract and draw up the contract directly with the Canadians.

Mr. KEENLEYSIDE: We did.

Mr. BYRNE: You do not know much about trade unionism, evidently.

Mr. MACDONALD: Was that not the choice of the C.L.C. and of the unions in question that you should deal with the United States representatives?

Mr. KEENLEYSIDE: We did exactly what we were advised to do by the Canadian Labour Congress. We dealt with the British Columbia labour unions with whom we will have to work for the next ten years. Everything was done with them. We drafted the whole arrangement in British Columbia. It was signed by the Canadian heads of the unions in British Columbia. The organization that was ultimately set up, the Columbia Hydro Constructors Limited, was set up in British Columbia. This plan was drafted for the Columbia in 1960, but in 1961 the Canadian representatives of the Canadian unions in British Columbia came to see my colleague, Dr. Shrum, and asked him if they could have the same arrangement on the Peace, that is to set up the Peace Constructors Limited, and this was done as a result of their request. Subsequently, they came to us again and said that they would like the same arrangements for the Columbia. These were all Canadians. We organized the meeting at which the terms of agreement for the Columbia were worked out with these Canadians in British Columbia. The whole thing has been done with Canada, except that we had the courtesy to bring in the head of the department of the international unions. He came and took part in a meeting; he gave us his official blessing. Everything else was done with the Canadians.

Mr. HERRIDGE: In view of this agreement which you mentioned which has been discussed, why then do you require this clause in the British Columbia Hydro Authority act which makes strikes illegal? This is getting close to fascism.

Mr. KEENLEYSIDE: Mr. Chairman, I do not know whether you want us to go into a discussion of the domestic legislation of British Columbia. In the first place, the Act is not in effect; we are now operating under the same act under which we operated the British Columbia Power Commission for the last 18 years. Our relations with our employees are very satisfactory. I think it is not too much to say that they feel we are good employers, and we intend to remain that way.

The CHAIRMAN: May I intervene? I have been disturbed by the line of questioning from a number of members over the last couple of days. It seems to me that we do have a duty, all of us, to discipline ourselves. We know we have a long path ahead before we complete these hearings. Mr. Herridge, of all the members has indicated how many witnesses we are likely to hear; therefore

we are going to have to be very busy on this job. I think the Chairman, to do a good job and to make sure everyone has his chance, has to insist on a certain relevance. It seems to me that we should, if possible, stay as far aside as possible from anything that might be construed as politics or anything that is extraneous to this matter under consideration, I do not want to cut people down; I do not want to be a rigid Chairman.

Mr. HERRIDGE: I am not dealing with partisan politics. In fact, this is a personal view of mine, and I was asked by certain labour people in British Columbia to bring this to the attention of the house and before the committee. I have done that.

Mr. MACDONALD: Mr. Chairman, if I might speak to this labour question, would it be correct to say that whatever the provisions of the British Columbia Hydro Act with regard to labour relations, they are quite irrelevant with respect to the employees or the contractors to be employed on this project?

Mr. KEENLEYSIDE: The arrangement in connection with the Columbia project itself is this: The Columbia Hydro Constructors Limited has been set up to represent all of the employers, all of the contractors who will work on the project. Every contractor who gets a job has to join this organization. There has also been set up an Allied Hydro Council which represents 18 of the major unions in British Columbia and 23 local unions in British Columbia. This Allied Hydro Council represents the labour side.

These two organizations, with the British Columbia Hydro and Power, will try to ensure that there will be no labour difficulties between now and the completion of the projects. At the same time they will try to ensure that those who are employed on the project will obtain proper wages and proper conditions. In other words, instead of having 41 different labour organizations dealing with perhaps 50 different contractors, we have succeeded in bringing this down to one for each side. This seems to me to be a very sensible arrangement; and it has been so recognized by the contractors. The labour organizations have twice asked that we introduce this kind of scheme.

Mr. MACDONALD: Mr. Chairman, I have another series of questions which might take some time. Therefore, just speaking on a point of order now, may we perhaps agree to adjourn and, in deference to Mr. Cameron, not sit at four o'clock this afternoon but rather sit again tomorrow morning?

Mr. GELBER: I have a supplementary question on a previous point.

The CHAIRMAN: Mr. Gelber.

Mr. GELBER: Would Dr. Keenleyside say that the procedure for the negotiations with the trade unions was determined by the international structure of the trade unions and the relationships with the Canadian Labour Congress, while exercising the courtesies involved?

Mr. KEENLEYSIDE: I think, Mr. Gelber, if we had followed what might have been a more natural course we would have gone to the local unions in Vancouver and, through them, to Washington. We would not ourselves have brought the Canadian Labour Congress into the picture at all. However, for the reasons that I indicated in the quotation that I read from my memorandum to the Commission, we took the unnecessary, although I think desirable, step of talking to the Canadian Labour Congress about it to see that we could keep the project as Canadian as possible.

The CHAIRMAN: Gentlemen, I am advised by Dr. Keenleyside that he has certain commitments which compel him to leave tomorrow at 11:30. Of course, he is prepared to return—

Mr. KEENLEYSIDE: On Monday, if necessary.

The CHAIRMAN: We have already made arrangements for General McNaughton to be our witness on Monday. I am in the hands of the committee who will decide what we should do in the circumstances.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, while I appreciate Mr. Macdonald's extraordinary kindness to my decrepitude, I would point out once again that he has completely mistaken my objections. I have not objected to multiple meetings on one day, but I have objected to meetings day after day.

I have undertaken some research which may be a guide to the committee in its determination. Ten years ago I was engaged in a committee which was discussing the revision of the Bank Act. I assure you that the matters were equally complex and equally technical as those we are discussing here. We had 20 to 30 witnesses, many of whom came from almost as far away as Dr. Keenleyside—from Alberta and Saskatchewan. We had 29 meetings on 15 days, and when I say 29 meetings I am referring to each meeting in the day, as clarified in the report, as one meeting. This was over a period of two months, from March 16 to May 18, 1954. In that time we were able, meeting only twice a week—Tuesday and Thursday—and on only one occasion that I can find meeting in the evening, to complete a task which was equally difficult and equally complex as the one we are dealing with today.

I suggest the contention that we are more rushed than the banking and commerce committees ten years ago is without foundation.

The CHAIRMAN: Mr. Cameron, prior to the Christmas recess we concluded the sittings of the defence committee which, as I recall, heard 49 witnesses. Members of that committee will recall that they sat for many weeks, particularly when they were away, day after day. They sat for long hours, and multiple hearings were held each day.

Of course, we know, because this has been manifest in the statements made in the House of Commons, that there is a certain time factor to be considered in respect of the Columbia river. One of the ways in which we can defeat the river project is to stall. We can destroy this not on the merits at all but simply by failing to do our work—our special work, I might say—as a hard working committee now.

I am gratified that you do not object to multiple sittings on certain days. In the light of that, would the committee be prepared to meet this afternoon? Agreed.

Mr. GELBER: Another point to take into consideration is that we are all experts on banking but we have much to learn about engineering.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): No; Mr. Gelber is quite wrong. We had a number of people who were as inexperienced as some of the witnesses here.

You have made a reference to a time limit. Can you tell us what that time limit is?

The CHAIRMAN: I am not in a position to do this, but from the evidence which has come before the committee to this date I thought it was clear that there had to be certain decisions taken by some United States financial authorities prior to the early fall.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I would suggest, Mr. Chairman, that if these hearings are held as competently as the hearings of the banking and commerce committee ten years ago, two months would be ample time in which to perform that work. That would mean that we would conclude before the fall. We would conclude on about June 7.

The CHAIRMAN: May I ask Dr. Keenleyside to answer your question, Mr. Cameron, in regard to time?

Mr. KEENLEYSIDE: Mr. Chairman, gentlemen, I do not of course wish to try to direct the committee in any way. Obviously, the House of Commons, acting on the recommendations of this committee, will be the final body to

decide what should be done about this project. The problem in regard to time is that there are certain things that have to be done in a preliminary way in order to prepare for the letting of major contracts after the U.S. payment has been received on October 1.

The provincial government is prepared to take a chance, once the committee of the House of Commons has acted, on the United States making a payment on October 1 and to go ahead with certain things during this summer in order to be able to proceed with the major program shortly after October 1.

The second matter that affects the time element is that the United States has to prepare the bond issue and they have to find purchasers for the bonds. They have to do all this in order to provide us with \$275 million Canadian, or \$254 million in United States funds, on October 1. They are in effect sitting on the edges of their chairs in New York and Washington waiting to hear that the treaty has been ratified or rather has been approved by Parliament in Canada before they start their campaign.

I am no expert in these matters, but I understand that the preparation and sale of bonds in that order of magnitude take quite a few months. While they are not being impolite about it at all, they have indicated to us that they hope the House of Commons will make a decision on this matter relatively soon. As I say, they are not being impolite; they have just expressed the hope that it will not be very long delayed, whatever the decision may be.

Mr. GELBER: May I raise a point of order, Mr. Chairman?

The CHAIRMAN: Mr. Gelber.

Mr. GELBER: There is another very important consideration in terms of the business of the house. That is, other committees are not meeting at the moment but they will probably start meeting shortly and the members will be engaged in other activities. The more time we can devote at this stage to the hearings of this committee, the more convenient it will be for the members of the committee.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Let me point out that again we have had no firm suggestion of what that period is. Dr. Keenleyside suggests that the government of British Columbia and the hydro authority of British Columbia would take some action in the early summer. I suggest we can well look forward to terminating the hearings of this committee by June 7 if we are as expeditious as was the banking and commerce committee.

The CHAIRMAN: I hope so. But I think that members of the committee would be very concerned if it appeared—even if it appeared and was not a fact—that we had hurried any witness who cared to be heard on this matter.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I suggest that the public would be even more concerned if they found that this committee had conducted its hearings in such a way that the members have been unable intelligently to see the evidence before other witnesses came. The proceedings would have been reduced to a farce.

Mr. BYRNE: Are we discussing a motion to adjourn or not?

Mr. PATTERSON: The public would be even more concerned if the stalling tactics that are carried on in the house were transferred to this committee.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I protest any implication that I am doing any stalling. I simply ask that this committee adapt itself to a rational manner. I submit that we cannot do it under the present schedule.

Mr. KINDT: May we have some common sense and a proper approach. In the House of Commons there is a private members' hour between five and six, and the supper hour is between six and eight. Now, if the committee could meet between five and seven, for a two hour period, it would have very little effect on anyone except those who wished to attend the private members' hour,

and not many of us attend that unless some bill comes up that we are particularly interested in.

The CHAIRMAN: We have a motion before us to meet at our regular time of four o'clock. Is that agreeable?

Agreed.

May we now adjourn?

Mr. PATTERSON: Mr. Herridge understood that I was referring to activities in the house relative to this issue, but I was not. I was referring simply to general debates in the House of Commons, not to this issue.

Mr. KINDT: I did not like your remark about stalling.

Mr. PATTERSON: No, but there has been plenty of it.

The committee adjourned until 4.00 p.m. today.

AFTERNOON SESSION

WEDNESDAY, April 15, 1964.

The CHAIRMAN: Gentlemen, when we adjourned Mr. Macdonald was first on the list. If he has completed, I will proceed to Mr. Fleming; if not, we will continue with Mr. Macdonald. Are you finished Mr. Macdonald?

Mr. MACDONALD: So far as I am concerned, yes. I was finished on that particular point but had a number of other things.

Mr. BYRNE: I would like to be put on the list since I am from the Columbia river valley and have to leave at five o'clock today.

The CHAIRMAN: The list I have is Mr. Fleming, Mr. Groos, Mr. Herridge, Mr. Willoughby, Mr. Chatterton and then Mr. Byrne.

Mr. BYRNE: Then I might as well retire now, because I have to leave at five o'clock.

Mr. PUGH: Mr. Fleming has just left.

The CHAIRMAN: Would it be acceptable to the committee that Mr. Byrne be substituted for Mr. Fleming?

Some hon. MEMBERS: Yes.

The CHAIRMAN: I will recognize Mr. Byrne first, but I think Mr. Keenleyside has something to say.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would you put my name on the list?

Mr. KINDT: I have not had an opportunity to talk yet.

Mr. MACDONALD: What happened to me? I thought I had the right to go on with a number of other points.

The CHAIRMAN: Then you are not finished?

Mr. MACDONALD: That is right.

The CHAIRMAN: We will start with Mr. Macdonald, followed by Mr. Byrne.

Mr. KEENLEYSIDE: Mr. Chairman and gentlemen, I should like to make a clarification of something I said this morning because I am told that I inadvertently may have misled the members of the committee about it. I interjected in the course of my statement the comment that the cost of the power that would be created in the west Kootenay plans by the Libby construction work would work out at about \$60 a kilowatt. This was not correct if applied to the whole picture. It was correct only in relation to any power that would be generated in the plants already existing there.

The cost of power in the Canal plant, which would have to be constructed in order to take full advantage of what is done by the construction of Libby, would be of a more normal character, \$250, perhaps, a kilowatt. Perhaps the best way of settling this whole matter simply is to say that the construction of Libby would make available 250,000 new kilowatts of power in that area at an average cost of just about two mills.

Mr. Davis: Does that include the cost of flooding in the tail end of the Libby reservoir?

Mr. KEENLEYSIDE: That includes everything.

Mr. MACDONALD: The next item I would like to deal with is the question raised by article IV of the treaty.

Mr. BYRNE: That is not quite clear in my own mind yet regarding the Canal plant. Am I to understand that the combined power, that is, of the Canal plant plus the power generated from existing turbines, would cost approximately that, so that the existing plans are then produced for much less than two mills?

Mr. KEENLEYSIDE: The existing plant would be producing for very much less. It is not a great amount, but they can increase their present production by using this additional controlled water. It would be very cheap power; it would be something of the order of \$60 a kilowatt. Taking into account the whole picture, however, the construction of the Canal plant, using that, and taking into account the putting in of new generators in the existing plants, the total would come to roughly two mills per kilowatt hour.

Mr. MACDONALD: I would refer to article IV, subsection (3) of the treaty, and the suggestion that even after the end of the treaty it could be argued that Canada's obligation in respect of flood control assistance might appear to be a permanent infringement on Canadian sovereignty. Has any study been given to the effect of that particular provision?

Mr. KEENLEYSIDE: The question, as I understand it, is whether there is any disadvantage resulting from the agreement in the treaty that even at the end of the treaty, so long as the plants on the Columbia in Canada are in physical being and can be used for such purpose, they will be used for flood control if it is necessary or desirable to do so. This is perfectly true. They will be used in that way, but under the treaty and the protocol the arrangement now has been made that the United States will not call for any additional flood control action on the part of Canada unless a flood of a stated size, namely 600,000 cubic feet per second at the Dalles, is in prospect. They will not call for it until it has been shown they cannot handle that flood by using all of the storages available in the United States. If they find they are going to be faced with such a flood, and if they find they cannot control the situation by using all of their available storages in the United States, then they are entitled to ask Canada to do something about it. If Canada receives that request and acts on it, as of course we would, then they undertake to pay the full cost of the operation itself, any cost that is involved in our putting additional storage behind our dams, and in addition to what they will pay for any loss we may incur—any economic loss—by having to handle the water in such a way as to reduce our generation, or if in some other way we are not going to get the advantages we normally would get.

I think it could be argued quite properly that if we received a call of this sort from the United States, we certainly would meet it in any case, whether we would be paid for it or not. Obviously we would not sit idly by if we knew that towns and people were going to be flooded out and that there might be loss of property and possibly of life downstream in the United States. So, if the demand was made, we would certainly meet any such claim from

the United States, even if we were not paid; but, the fact of the matter is we would be paid for it.

I used the expression earlier, "virtue is not its own reward". In this case, virtue is very well paid.

Mr. MACDONALD: Yesterday, I was asking Mr. Williston about both the question of compensation policies to be followed with regard to land taking and also economic studies in respect of the land which is not taken, namely the effect of other economic uses in the east Kootenay valley that sequence IXa might have.

Firstly, with regard to compensation, we all have been concerned about the effect, particularly on the people of the Arrow lakes, in the expropriation of their lands. I would like to bring to your attention a statement by a prominent resident of the Arrow lakes area which is to be found in *Hansard* of March 5 this year, at page 602. This apparently is an account of the first expropriation involved in this:

First, there was a total acreage involved of 37.95 acres. Second, there were 10 acres of cleared land, house and buildings. Third, the total assessed value was \$3,450. Fourth, the amount paid by British Columbia Hydro and power authority was \$4,750 which represents a compensation rate of assessed value plus one third. Compare this with what Mr. Williston said. In our district taxes on agricultural land are usually assessed at 50 or 60 per cent of its market value. On the basis of Mr. Williston's statement the owners to be flooded on the Arrow lakes, the Columbia river and in the Revelstoke area expect to receive not less than six times the assessed value, plus 25 per cent for the misery and loss of happiness occasioned by this flooding.

I wonder whether you are familiar with that situation and whether you would make a comment in respect of the general policy regarding compensation?

Mr. KEENLEYSIDE: I was not familiar with it until I read the statement in *Hansard*, but subsequently I checked to see what had happened in this particular instance. Let me say that in general the position is as I outlined it this morning; that is, that we propose to deal with people, who have property which is to be disturbed, in a fair and just, but generous, manner. In this case, and in the particular instance to which you have referred, the hon. member for Kootenay West has been misinformed with regard to some of the facts. In the first place, this was not an expropriation at all. The assessed value of the property was not \$3,450; it was \$2,485. The circumstances in general were these. This property was required for the Duncan project. We negotiated freely with the owner. We asked for an option on the property which would be exercisable within three months, but the owner was not willing to give an option and wished to sell immediately. The agreement finally made was for an immediate sale. We offered \$4,500 for the property. The owner suggested \$4,950, and we finally agreed on \$4,750.

The acreage involved was a little over 37 acres. The property was assessed in 1962 at \$2,485. When the agreement to purchase was made the property was unoccupied and had been for quite a long time. The buildings on the land consisted of an old house and some sheds. The house had no windows intact and it had been ransacked. The property was littered with derelict cars and bits of machinery. On the whole, it was a fair and reasonable deal; and the owner got almost what she asked.

Mr. HERRIDGE: Mr. Chairman, following that up, the owner came to see me and was most dissatisfied.

I notice you mentioned the figure of \$3,450 as the total assessed value. Was not the total assessed value the year before you mentioned and was not the assessment dropped?

Mr. KEENLEYSIDE: I do not know what the assessed value was in the past; I know the assessed value at the time. The deal made with the owner was for \$2,485. I did not say it was \$3,450; that was Mr. Herridge's figure.

Mr. HERRIDGE: I saw the assessment; that was the assessed value the year before, and the assessment had been dropped prior to purchase by the British Columbia Hydro and Power Authority.

Now, this poor chap was not well and he was not capable of defending himself. He was most dissatisfied. I said to him: "Well, why did you sign it?" He said: "We are hard up and we could not go through the courts or anything like that". Any number of people who know the circumstances will confirm that statement. Here is a piece of property taken by the British Columbia Hydro and Power Authority which is on a main road. Regardless of the buildings—I know they are not up to much—there are 37.95 acres which will become very valuable in a few years because that is going to be made a standard highway; and, if the Duncan dam goes in, it will be valuable property because of the increased activity there. There was general criticism of this purchase in that district.

Mr. KEENLEYSIDE: Of course, anyone who is not satisfied with the offer that is made has the perfect right to refuse to accept the offer. If expropriation proceedings then are taken the matter can be dealt with either in one of three ways, two of which will cost the owner nothing.

Mr. CHATTERTON: I have a supplementary question, Mr. Chairman, in respect of expropriation.

I understand there are quite a number of properties held by veterans under the Veterans' Land Act where the title is held by the crown and where, I understand, you would not have authority to expropriate. Do you have any arrangement or agreement with the government in respect of these properties?

Mr. KEENLEYSIDE: We have had problems of this sort in the past and they have been worked out usually on an ad hoc basis. As far as I am aware, there is not any regulation which has to be applied to each case. But, we realize the problem and, of course, particularly in the case of veterans, we naturally are anxious to do the fair, reasonable and just thing. To my knowledge, at least in the period I have been associated with the Power Authority, there has not been a case in which there has been any serious feeling of dissatisfaction on the part of the person concerned.

Mr. HERRIDGE: Mr. Chairman, I have a supplementary question.

Would the chairman tell the members of this committee what formula the authority is going to use in respect of compensation. Now that applies to all. We have been told that each person will be treated individually. What formula have you for compensation? We recognize that rural property is usually assessed at about 50 per cent of its market value. Would the chairman tell us what formula he is going to use?

Mr. KEENLEYSIDE: We do not have a formula and we have no intention of having one for it would have to be applied in the Procrustean way to everyone. We think it would be far better from a standpoint of the people if we dealt with them on an individual basis rather than for example saying they would get \$4.00 in addition to the assessed value. We consider if we had a rule of that kind and applied it to every case we certainly would run into many difficulties. In far more circumstances the people concerned would be more dissatisfied with a set formula than they will be under the methods we propose to adopt.

Mr. WILLOUGHBY: Dr. Keenleyside just mentioned there were three methods these people could take, two of which would cost them nothing. Would Dr. Keenleyside mind outlining what they are.

Mr. KEENLEYSIDE: Yes. Actually, there are three different acts but the Water Act is the one most likely to be used. Under this act application can be made to the water comptroller who would appoint an arbitrator, if both sides are willing—and we certainly would be willing. This individual who is usually one of the senior engineers would deal with the matter and to make a decision as to what a fair price should be.

Mr. CHATTERTON: Is there an appeal of that decision?

Mr. KEENLEYSIDE: Yes, there is an appeal in all these decisions unless there is an agreement in advance there will not be an appeal.

The second way is by the setting up of an agreed arrangement under which both sides will choose an arbitrator who will act as such, and then they normally would agree to accept the decision which would be made by him.

The third way is by the appointment of a member of the supreme court of the province. There is an appeal from the decision of a single member of the supreme court to the appeal court of the province. So, any one of these three steps can be taken.

Mr. WILLOUGHBY: Am I correct in assuming there is not a permanent arbitration board?

Mr. KEENLEYSIDE: I think it is quite conceivable that under the recommendations which are likely to be made by the Royal Commission which is presently examining the whole expropriation procedure in British Columbia, provision may be made for a permanent arbitration court or something like that. We do not know yet what form the recommendation will take, but I am quite confident this consideration is being studied by the Royal Commission. If this provision is made, I think, it will be a convenience and an advantage in the case of the Columbia because there may be quite a lot of incidents which develop in this area.

Mr. FAIRWEATHER: Mr. Chairman, I have a supplementary question for Dr. Keenleyside. I have given him warning of the area in which I wish to put the question, which concerns the matter of expropriation.

I am interested in those people who may not lose freehold, may not lose their homes and so on, but perhaps are in some small business in the area. We have had a good deal of experience in this connection in respect of Camp Gagetown, New Brunswick and the St. Lawrence seaway; the home and the freehold are left but their source of livelihood is gone. I know this is a new area of law but I thought that Dr. Keenleyside, in his speech to the board of trade, said that the commission was not a soulless creature. I hope you will expound this philosophy. I am thinking of a storekeeper whose store may be left and not flooded but the homes of 100 people may go, which is a measurable damage, as I see it. Along the Saint John river in New Brunswick they expropriated hundreds of square miles to make way for Camp Gagetown but they left fringes of really destitute people. I would hate to think that there would be a repetition of this in British Columbia.

Mr. KEENLEYSIDE: Mr. Chairman, this is the sort of thing that I think we will have to face in a good many instances. I think we will have to make decisions in this regard. I think any recommendation made will be in accordance with the general principles that if a person is going to suffer we will have to do what we can to rectify the situation. If a store, for instance, is left but all the customers have been moved and therefore will not be dealing with the storekeeper we would normally be expected to help that storekeeper move and settle somewhere else.

Mr. HERRIDGE: Mr. Chairman, I represent an area in which most of the affected people reside. These individuals are concerned about this project and I have received correspondence in this respect.

I should like to quote from a British Columbia Hydro and Power authority transcript of a meeting with Dr. Keenleyside which took place on February 20, 1964 at Revelstoke. At page 22 of this verbatim report Dr. Keenleyside is reported as having stated:

—we know that there are quite a lot of the 1,600 people there who are just waiting until they get an offer and some cash for their property. A good many of them have told us they would have sold a long time ago if anybody had offered them anything.

Dr. Keenleyside, could you indicate to me how many people have told you that they would have sold a long time ago if anyone had made a reasonable offer? I know these people well, having lived among them for many years.

Mr. KEENLEYSIDE: Mr. Chairman, I am not at all sure that I used the words: "—if anybody had offered them anything". I certainly have no intention of adding up the number of people who have told me about the problems they are going to be faced with in the Arrow lakes area. Nor do I intend to add up the number of instances about which I have been told in respect of similar conversations that people in these areas have had with members of our staff. I think the general statement I made there is quite accurate. There are a good many people there who would have sold out long ago if they had received any reasonable offer for their property. I imagine, as I said this morning, that there are quite a few of these people who, when they receive a fair offer, will decide they want to move to the coast, go to live with relatives, or something of the kind.

The CHAIRMAN: I will now recognize Mr. Pugh, then Mr. Davis and then Mr. Brewin.

Mr. PUGH: You said a survey had been made of the Revelstoke area. Do you know how many businesses will be disturbed?

Mr. KEENLEYSIDE: I do not think we have actual figures in respect of the number of businesses that will be affected there. The people who are going to be affected know about the situation. I assume we have those figures in our files.

Mr. PUGH: Do you know the number of homes that will be disturbed?

Mr. KEENLEYSIDE: There again I think certainly we must have those figures in our files but I do not have them with me at this time.

Mr. PUGH: I was looking at the map to which Mr. Milligan has referred, and wondered whether Mr. Milligan would give us some information in respect of the number of people and areas which will be disturbed south of Revelstoke as a result of this project?

Mr. KEENLEYSIDE: Mr. Chairman, if it is agreeable I think perhaps I will ask Mr. Milligan to give you the information in respect to the situation at Revelstoke, as he is intimately acquainted with that situation.

Mr. MILLIGAN: I am afraid I do not have those exact figures with me Mr. Pugh. However, I do have them in my office back home.

The city of Revelstoke is located here on the map. There is room for expansion in this section to the south and to the north of the city along this strip of land. Over here on the Jordan River flats across the river is an area for suitable industrial expansion. There are further areas suitable for resi-

dential expansion such as in a section called the Big Eddy subdivision. A considerable number of acres are available there.

Mr. PUGH: Will there have to be any relocation in respect of the railway and highway bridges?

Mr. MILLIGAN: There will not be any relocation required in respect of either bridge. We will instal direction booms to ensure that the logs floating down the river to a downstream mill go through the navigation span of the railway bridge during high water.

Mr. PUGH: What percentage of the arable land will be under water from Revelstoke to the head of the lakes?

Mr. MILLIGAN: The arable land is represented on this map in red in the area from here to here. Almost all of that will be flooded.

Mr. PUGH: I used the term "arable". Is any of that area now under cultivation?

Mr. MILLIGAN: There are two major farms in the area. There is a dairy farm at Revelstoke and another further down river.

Mr. PUGH: To what extent has your planning been discussed with the officials of Revelstoke?

Mr. MILLIGAN: We have discussed the developments that will take place in the Revelstoke area with these authorities and, as Dr. Keenleyside said today, the expansion effect on Revelstoke will be tremendous. It is in Revelstoke's hands to design and create a wonderful tourist resort there and it is in the hands of these officials to bring this about.

Mr. PUGH: Can you give us some information in respect of the extended boundaries of Revelstoke?

Mr. MILLIGAN: I would anticipate that Revelstoke will extend its borders to take in an area here to provide more room for relocation and expansion. Bylaws, zoning laws and other necessary regulations can then be established for the whole area.

Mr. PUGH: Thank you very much. Mr. Fleming, who was called away, asked me to place these questions on the record.

Mr. DAVIS: Mr. Chairman, assume there is early ratification of the treaty, how soon would these expropriation procedures get under way, and how many years will be required before the situation is finalized?

Mr. KEENLEYSIDE: Mr. Chairman, the commencement of this procedure will be almost immediate because we plan to set up offices in the area of the dam sites. We desire to make arrangements with the owners of the property almost at once. If parliament decided in favour of the treaty proposal I would think it reasonable to assume there will be discussions with the people involved almost immediately. This situation will vary in respect of different places. I think we can accomplish all that needs to be accomplished in the Duncan lake area quite rapidly. Arrangements necessitated in the Mica area probably will not be particularly serious because of the low number of individuals involved. I think arrangements in respect of the Arrow lakes area will have to be made over a period of some years.

Mr. HERRIDGE: Mr. Chairman, in view of the fact that a question has been raised in respect of the land between Revelstoke and Arrowhead, I should like to submit figures which were presented in a brief to the corporation of the

city of Revelstoke and associated boards of trade. I think these figures give an idea of the estimated value of the land and the quantity of land involved.

Agriculture: In the area from Revelstoke south to Arrowhead there are approximately 4,500 acres of cleared land and at least 23,500 acres of potential arable land.

Value of cleared land

| | |
|---|--------------|
| Clearing 4,500 acres @ \$400 acre | \$1,800,000 |
| Built up value 4,500 acres @ \$200 acre | 900,000 |
| Crop value 4,500 acres @ \$60 year | 270,000 |
| Crop value projected to 60 years | \$16,200,000 |
| | <hr/> |
| | \$19,170,000 |

Potential value of uncleared land

| | |
|------------------------------------|--------------|
| 23,500 acres @ \$60 year | \$1,410,000 |
| Projected potential 60 years | 84,600,000 |
| | <hr/> |
| | \$86,010,000 |

Mr. BYRNE: It would seem to me that the hon. member from Kootenay West, who has had a considerable time of the committee since it began sitting, is now introducing a new subject. I understood I was going to have an opportunity to question the witness.

Mr. HERRIDGE: I am nearly finished. These people are very concerned about this.

Mr. BYRNE: There is no question about that, Mr. Chairman, but I think it was understood that I was to be the next questioner.

The CHAIRMAN: This has become somewhat ragged; maybe it is my fault. Mr. Macdonald was the original questioner and I recognized Mr. Herridge as the last person to ask a supplementary question. As soon as Mr. Macdonald is completed I wish to recognize Mr. Byrne to accommodate him, if possible, because of his indication that he has to be away.

Mr. STEWART: Mr. Chairman, on a point of order. I believe Mr. Herridge was merely volunteering information rather than pursuing a line of questioning. I wonder if it would be possible for him to appear as a learned witness. He knows a great deal about it.

Mr. HERRIDGE: I would have been finished before now if I were allowed to complete my statement. I have been asked to bring this to the attention of the committee.

Mr. BYRNE: The impression that we seem to be getting here is that Mr. Herridge is representing the only area that has problems arising out of this matter. He should give some consideration to other members of the committee who also have problems arising out of this matter, and take his turn. I am suggesting that he should be fair.

Mr. HERRIDGE: I am trying to be as restrained as possible. I nearly blew up this morning, but did not.

Mr. LEOE: Mr. Chairman, on a point of order, there have been questions in my mind for some time as to the relationship between what we are discussing and what we are entrusted with, that is to accept or not accept the treaty with the United States. I sometimes feel we are getting a long way away from the point we are trying to discuss namely whether it is a good treaty or whether it is not. Up to now I have not said anything but since a point of order has

been raised I think we should, as a committee, give serious consideration to how far afield we can go on these matters. For instance, we should consider whether the figures that are being put on the record now are related to whether or not this is a good treaty. There are many things coming up below this committee that have only to do with the province of British Columbia and with their legislative body. I think this committee should not be asked to deal with problems which are solely the problems of British Columbia.

The CHAIRMAN: I must confess I feel that if this committee endeavours to sit as a committee which might be sitting, for example, by appointment from the legislature of British Columbia, then we are really not doing our duty properly. We are presumably looking at this from a national point of view.

Mr. HERRIDGE: And its effect on Canadians.

The CHAIRMAN: There has to be a certain latitude. I am in the hands of the committee as to what that latitude will be, and I do not think we have really determined how far we can go in giving freedom to any member. Mr. Herridge has indicated he has nearly completed his point. I think the point is well taken. Our issue as a committee is not to explore precisely how injured persons may deal with their own province but rather how this treaty affects Canada.

Mr. PUGH: I wish to add a point. I do think I would go along with Mr. Herridge. I think he is perfectly entitled to put forward the point of view of the people of his province. After all his constituency is affected just as much as Okanagan-Revelstoke.

Mr. BYRNE: I should like to say at this point that this was not the point of order I raised. Mr. Herridge has the right to discuss every man, woman and child in his riding who is affected but he must accept the fact that coming from West Kootenay I also have problems affecting men, women and children, wildlife and so on. All I am asking is that he give other members of the committee some consideration. He has monopolized the time of the committee. That was my point of order.

Mr. PUGH: I would say that it is of the greatest interest to everyone in parliament, and certainly in this room, to become acquainted with the effects of the Columbia treaty. Whether it is a good treaty or not, certainly the human element must be considered along with the cash.

Mr. HERRIDGE: Can I conclude this? I am concerned with the Canadians rather than the dollars. I continue:

| | |
|---|----------------------|
| Less clearing and building up cost | 23,500 acres @ \$600 |
| acre | \$14,100,000 |
| Potential return of the uncleared land in 60 years .. | \$71,910,000 |
| Combined potential and present actual return for 60 | |
| years | \$91,080,000 |

The above is estimated very conservatively as a dairy in Revelstoke uses approximately 400 acres from which \$88,000 of produce accrue annually or \$220 per acre. On this basis the projected return of the total potential land value of 28,000 acres projected over a 60 year period could conceivably be in the neighbourhood of \$300 million.

That is submitted by the corporation of the city of Revelstoke and the associated boards of trade of the city of Revelstoke.

The CHAIRMAN: Is this a supplementary question?

Mr. HERRIDGE: No, but I want to bring this to the attention of the committee in view of the evidence.

The CHAIRMAN: Surely you would not ask that it be accepted as evidence.

Mr. KEENLEYSIDE: May I interject in reference to this? First of all I would like, if I may, to ask for the date of this document?

Mr. HERRIDGE: It is not dated at the present time but it is an authentic document.

Mr. MACDONALD: Mr. Byrne has to leave so I will defer my questions until later. Would you put me at the bottom of the totem pole please?

Mr. BYRNE: I beg the indulgence of the committee. Mr. Herridge may be interested in Canadians and not in dollars; there are a lot of Canadians who are interested in dollars, which is the converse. I would remind the committee that there are other people who are concerned and who are going to be affected by this treaty, and they are not all living in the West Kootenay.

I would like to ask Mr. Keenleyside if there are any plans for the clearing of the flooded plain, that is the 40 miles that will be flooded in Canada in the Wardner-Newgate area.

Mr. KEENLEYSIDE: I thought Mr. Williston answered that question last night in some detail. The situation is that the Department of Agriculture and the Department of Forestry are making regulations in regard to how this is to be done. They have not yet given us the precise directions as to what we are to do in that area. They are working on it, and I assume that we will get those directions very soon.

Mr. BYRNE: I have an article here from the *Fernie Free Press*. I wonder if anyone here from the British Columbia government knows who is Howard Paish, who appears to be a representative of the fish and game clubs. Is he connected in any way with the government?

Mr. KEENLEYSIDE: Mr. Milligan says he is a school principal in Canal Flats.

Mr. BYRNE: The newspaper indicates that it was stated emphatically by Howard Paish, representing east Kootenay fish and game clubs, that a lake to be created during the south country flooding for the Libby dam may turn out to be more of a liability than an asset unless the British Columbia government take steps to prevent it. Of course, you have indicated that you are going to take some steps. Will there be a clearing down to the level at which the water will be drawn? Will there be dead windfalls and so on lying at the shoreline?

Mr. KEENLEYSIDE: I think we can say with some assurance that that will not be the case. As Mr. Milligan said in relation to the other dam, we are not going to leave that sort of thing lying around on the shoreline. The fact is that there has not yet been an agreement with the United States authorities on the precise plan of operation for Libby which would indicate the exact amount of draw-down in that area, so we do not know how much the drawdown will be. We can assume with complete assurance that there will be no mess of the kind to which you refer left in the area.

You may be interested, Mr. Byrne, to know that the plans which are being developed in the region are having the advantage of the advice of the wildlife expert there, Mr. Smith, who I believe is generally looked upon as being one of the best people of this kind in the country.

Mr. BYRNE: He says further that clearing for navigation would mean clearing wide enough for a canoe. Of course, this is just someone running off at the mouth, as some of our members are doing, and who apparently knows nothing of what he is speaking.

As you will know, Dr. Keenleyside, having been connected with the Columbia river planning since 1944, since 1945 there has been a constant threat because it has been indicated in the discussions and by the planning that there would be a dam at Libby. For that reason almost a generation has gone by in which people have been living in that area while having been unable to make long-range plans. They have substantial farms but they have been unable to make long-range plans. For that reason they have suffered much more than the people, for example, in west Kootenay, a development which has taken place within the last six or eight years since the decision with regard to the flooding

of the Arrow lakes area. Therefore, I believe that these people should be given special consideration when it comes to compensation for their losses.

I believe expropriation will be fairly handled and I have no question on that, but I should say that you will realize that if we had flooded the entire east Kootenay, as is suggested by the McNaughton plan, we would have divided practically the entire east Kootenay in so far as transportation is concerned. We would have created a huge body of water which it would be possible to cross, without ferries or bridges, only at some of the dams. This would have been a very serious matter for the communications in that area. However, we still have 42 miles of flooding in the Kootenay valley, and this does cut off quite a substantial industry, the lumbering industry, which delivers to the rail at Elko or Fernie. Certainly the cattle raising and other types of farming in which people are engaged on the west side of the Kootenay river will be involved. Those people will be cut off from their natural market; and they will have to travel some 60 to 80 miles farther to arrive at their natural market.

Is there any suggestion of a ferry being provided at or near the boundary line, or is the distance too great? Has any consideration been given to this matter?

Mr. KEENLEYSIDE: There has been no discussion of that so far, but I would not rule it out as an impossibility because the distance that the flooding will extend into Canada is 42 miles. I think it is not unreasonable to assume that there may be a good weight of evidence to indicate that a ferry upstream of the international boundary would be needed. However, I am not making any promises on that because I do not know what the situation is.

Mr. BYRNE: When the Canadian government experts were before the committee we heard a witness from the Department of Agriculture. I believe he was misinformed, or perhaps his information was out of date. He was speaking of a railway that traverses the Kootenay and Columbia valleys from Wardner to Golden. He said at that time that there was very little traffic on the railway. Of course, you will have later figures which will perhaps show that practically all the freight that travels by rail is now traversing that line between Wardner and Golden.

Mr. KEENLEYSIDE: There will be 113 miles of that line flooded out and 13 miles of the Canadian Pacific Railway, as well as all the highways and secondary roads and so on. One hundred and thirteen miles of Kootenay Central and 13 miles of the Canadian Pacific Railway will be flooded out.

Mr. BYRNE: A portion of the Canadian Pacific Railway will be flooded in any case by the Libby dam.

Mr. KEENLEYSIDE: Yes, some re-location will be required.

Mr. BYRNE: Has there been any estimate of the cost of relocating that railway and the highway—which I understand would require two ferries or floating barges—or the abandonment of about 50 miles of highway that is now a trans-Canada standard highway.

Mr. KEENLEYSIDE: We have the total figure for the estimated flooding costs in the area.

Mr. BYRNE: They would be up to date?

Mr. KEENLEYSIDE: Yes. This has been looked at as recently, I believe, as four months ago.

Mr. BYRNE: What is the cost of relocation and reimbursement of the flooded areas compared to the west Kootenay?

Mr. KEENLEYSIDE: The total estimated cost in the areas to be flooded by Libby is about \$12½ million.

Mr. BYRNE: I am comparing now sequence IX and the present treaty.

Mr. KEENLEYSIDE: I am sorry.

Mr. BYRNE: In the event that we abandon High Arrow and go back—which of course is the basis of our position—is my point.

Mr. KEENLEYSIDE: If you take the whole flooding of the area you will have a new east and west water barrier of 150 miles long across the boundary and Canal Flats, and down the Columbia close to Athalmer. It will wipe out a whole series of communities, and above all it will destroy the areas rapidly increasing in prosperity at Windermere and Athalmer where the resource facilities are being developed successfully.

Mr. BYRNE: I have another question which is of a more technical nature. I am leaving East Kootenay for the moment.

Does the hydro anticipate the use of a new method of transmission, such as direct current transmission? Have the studies progressed far enough for you to say?

Mr. KEENLEYSIDE: There is still a good deal of argument about a direct current plant. As you know, in the case of Quebec, there was a proposal to have a D.C. line that was going to go about 700 miles in Quebec to take power into New York city. But after a great deal of examination of various possibilities, they decided to do it by A.C. and not by D.C. Studies are being made of what is being done in Russia. You will know that in New Zealand they are putting in a D.C. line from the South Island to the North Island over a distance of some 200 miles, and they are using D.C., which is surprising, because it had always been argued that the breakline was in the order of 600 miles. That does not seem to hold any longer, and apparently has to be worked out on the basis of individual cases. I do not pretend to be an engineer. But we have an expert in the matter, and perhaps Mr. Kennedy might speak to the point.

Mr. W. D. KENNEDY (*Division Manager, Economic and Commercial Services*): I take it you are talking about the Columbia transmission.

Mr. BYRNE: I am thinking of the over-all cost of transmission on the Peace river which now seems to be fairly closely tied into this calculation. I wonder if you are going to adopt it, and if a transmission line will be sufficiently flexible when they come to revert to direct current transmission, after it becomes available?

Mr. KENNEDY: They have been looking at this. The original proposal for the Columbia was for 345 k.v. alternating current. Later studies showed that voltages up to 500 k.v. alternating current would be more appropriate. And on the Peace transmission the main line will certainly be 500 k.v. if not more, for the first line, and they may later go to a higher voltage. At the present time there are inter-ties across the boundary at 230 k.v. alternating current and a new inter-tie is under construction which upon completion will be 500 k.v. They are presently thinking of 500 k.v. alternating current for main transmission and we can go to higher alternating current voltage probably as time goes on.

Mr. BYRNE: Your transmission line runs down through Trail and in the Waneta area into the United States. Is this to be connected with the west Kootenay dams, or are you going to direct it in such a way that you would consider it part of your transmission?

Mr. KENNEDY: There has already been established an inter-tie between the Cominco system at Trail and Bonneville system on the other side of the line. It is expected that this will become a permanent arrangement. Also the southern part of British Columbia will before long be tied in with corresponding utilities in the United States to their great mutual advantage. We have a plan which we hope will materialize for a similar kind of inter-tie with Alberta, so that Alberta and British Columbia can profit by an interchange of power between the two systems, so I am told.

Mr. BYRNE: British Columbia Hydro is presently connected with west Kootenay Power through a line going north?

Mr. KENNEDY: Yes.

Mr. BYRNE: This is just a projection of your connection with West Kootenay Power, and it does not foresee any particular plan in respect of extension?

Mr. KEENLEYSIDE: Not immediately, no. But this may well develop into something more important. If, for example, we find that—taking a hypothetical case—we may be able to arrange with Bonneville and other utilities on the United States side of the line to take advantage of the tremendous market in California in consequence of the construction at Downie and Revelstoke pertaining more rapidly than is presently planned; this might well mean a new connection straight down the line from Revelstoke into the United States.

Mr. BYRNE: Thank you very much.

Mr. KEENLEYSIDE: And may I make one comment on something Mr. Byrne said which I think is of considerable importance. I have been very surprised at the fact that the people in the area that you have been talking about—and of course this is Mr. Herridge's concern as well—have been worried about the situation now for a long time. It has been dragging on and they did not know what was going to happen. They had it hanging over their heads. These people feel that they want a decision one way or another, and they say let us get it settled now. It comes up specifically in relation to the presentation which Mr. Herridge made of that document from the city council of Revelstoke. It seems to me that it is the same document which came to us back in 1960 or 1961, and it represented the point of view of some of the people there, at least at that time. Right now the people in Revelstoke are very anxious that the treaty should go ahead. They have questions about the arrangements which will be made for those who are going to be adversely affected, but that does not alter the fact that Revelstoke, as represented by its board of trade and its city council, is very anxious that the treaty be ratified, and that we got on with the job.

Mr. BYRNE: We have 4,500 signatures to that effect.

Mr. HERRIDGE: Out of 10,000. Dr. Keenleyside admits that they have not changed their opinion of the value of their land.

Mr. KEENLEYSIDE: Do I comment on that now?

The CHAIRMAN: No. I think we should co-operatively avoid trying to make statements and have them read into the record, when nobody cares to produce witnesses so that those witnesses could be questioned. This is not committee proceedings as I understand it, to work under the guise of questions in the committee, but actually to fill the record full of material which presumably is unsupported by evidence and which is certainly not subject to any cross examination. May I now recognize Mr. Groos?

Mr. GROOS: I wanted to ask Dr. Keenleyside something about the international aspect of this matter. I am trying to satisfy myself in my own mind on a number of general questions concerning this whole matter which are not specifically engineering questions but which are just the sort of questions which Canada as a whole will want to have answered.

We are coping with this rather complicated Columbia river system which crosses and recrosses the Canadian United States border. This is rather a complicated treaty for the man on the street to understand. I am interested in finding out how the various calls that can be made either way by Canada or the United States in the operation of this Columbia river system under the terms of the treaty and protocol are going to affect our relationships with the United States.

You, sir, being the chief operator of this system, must have studied this aspect, and I would like to know from you whether you see any dangers or sources of friction between ourselves and the United States, and if so, in your opinion, what are they? I think we would all be interested to hear.

Mr. KEENLEYSIDE: I think if I may make a general comment it would be this: most of the sources of friction and the causes of dispute and debate on this matter have already developed in the course of negotiations between Canada and the United States, but much more vividly within Canada itself. It seems to me to be perfectly clear that once the treaty is ratified—if it is ratified—and the two operating utilities are allowed to get to work on the job, the relationship between those two is going to be very good, and very co-operative not only because it is a tradition in the utility business to work in that way, but also because it is to their mutual advantage to do so. If they co-operate in making the total resources of the two systems available to meet the demands of the two areas, the result is bound to be good.

You can multiply usability of power very materially by co-operative arrangements of that kind. This is not just putting together ten and ten to make twenty; it is putting together ten and ten to get twenty-five. I think there can be no problem at all once we can get the political aspects of this matter settled, and get on with the job.

Mr. GROOS: So, you do not see any sources of friction in the day-by-day operation of this system?

Mr. KEENLEYSIDE: Perhaps we can ask the two engineers what their views are. I have expressed mine.

Mr. KENNEDY: I think in the past there always has been very good co-operation between the utilities in British Columbia and the Northwest Power Pool, the Bonneville Power Administration, and the people across the line. The recent case which comes to my mind is one where we in British Columbia hydro had a major fault in our generators and we had an enormous load. This load immediately was picked up across the line. This sort of co-operation goes on every day. The utility companies will help each other out of a difficulty. I think this co-operation will be strengthened by the treaty.

In the treaty there is provision for co-ordination and such arrangements as are necessary to be worked out will be worked out. From my own personal dealings, I am convinced that their engineers will be most co-operative.

Mr. GORDON KIDD (*Deputy Comptroller of Water Rights, British Columbia*): About all I could add to that is that we already have co-operative arrangements between British Columbia and the agencies who will compose the entities in the United States for the collection of hydro-meteorological data. In some cases the United States pays something towards this. In other cases it is to mutual advantage and is covered as part of our hydrometeorological system. We do co-operate, however, very, very closely now. We find that at the technical level we can get together and very easily sort out our differences.

Mr. WILLOUGHBY: Mr. Chairman, I have a few very brief questions which I would like to have cleared up. Before I do so, I would like to draw attention to an article in the Kamloops *Daily Sentinel* of Friday, April 10, relative to the committee hearing. I would like to assure the Canadian Press that I am not in any way critical of them, because they have actually reported the straight facts as they had them on the day of that meeting. However, since then those facts have been contradicted and I hope this contradiction has been picked up by the Canadian Press. The article which I would like to read is:

Witnesses said the High Arrow dam, opposed by some, would probably affect 260 farms, mostly small fruit acreages, and about 20,000 acres or less of potential farm land.

The next had been contradicted by Mr. Williston:

The alternative East Kootenay diversion project in the McNaughton concept would wipe out about 40 farms but bring within the range of irrigated use about 300,000 acres or so some time in the future.

We had that evidence which is no doubt correct, but yesterday it was brought to our attention that this 300,000 acres still would be available for irrigation whether or not the McNaughton plan was carried through. I think I am correct in making that statement.

The CHAIRMAN: Is this a question?

Mr. WILLOUGHBY: I would like to confirm that first. Is that correct, Dr. Keenleyside?

Mr. KEENLEYSIDE: I think that is correct. The situation is that that 300,000 acres could be irrigated if it were worth while to do so because of the quality of the land, but it is a very dubious economic proposition. As Mr. Williston pointed out yesterday, it is doubtful whether, with power at its very cheapest, it would be a profitable proposition to irrigate that land.

Mr. WILLOUGHBY: So, the impression from this article is not correct when it suggests the 300,000 acres will not be available?

Mr. KEENLEYSIDE: No. But, it could cost a lot more to irrigate that land.

Mr. WILLOUGHBY: I think I was correct in understanding that the cost of the power under the Mica project will be four mills delivered in Vancouver?

Mr. KEENLEYSIDE: No; three mills delivered.

Mr. WILLOUGHBY: On page 83 of the green book—this was the previous arrangement—the cost of four mills or less probably was correct?

Mr. KEENLEYSIDE: I clarify what I said a minute ago. Mica by itself would cost, delivered in Vancouver about $2\frac{1}{2}$ mills, but the Columbia project as a whole program delivered at Vancouver would cost about three mills.

Mr. WILLOUGHBY: That is fine.

On page 7 of your brief which you were reading this morning, down the middle of the page, you said:

Under the present agreement the United States is to pay a price high enough to cover the cost of Peace-Columbia power—

And I think you said Peace or Columbia.

Mr. KEENLEYSIDE: Peace or Columbia.

Mr. WILLOUGHBY: In that case there is no expense transmitting Peace power to the United States?

Mr. KEENLEYSIDE: It is not inconceivable that Peace power could be transmitted to the U.S.. We expect we will be using it up so rapidly ourselves that it will not be available for transmission to the United States; but it is not outside the realm of possibility that at some stage it might be possible to generate at the Number One site as well as Portage mountain site and transmit some of this power to the United States.

Mr. WILLOUGHBY: Are we to presume the relative cost of the two schemes is about the same? You say the Peace or the Columbia?

Mr. KEENLEYSIDE: Yes—well, it depends on the nature of the procedure which one develops. If you are developing two independent schemes in Canada, the cost would be about the same.

Mr. WILLOUGHBY: The Peace is relatively the same cost as the Columbia.

Mr. KEENLEYSIDE: Except for the sales agreement with the United States which makes the Columbia much better.

Mr. WILLOUGHBY: I am talking about the actual money which is going to be involved in the construction of the two projects.

Mr. KEENLEYSIDE: Well, it depends— I am sorry if I seem to be a bit obtuse about this, but I am not quite clear what it is you are wanting to compare here.

Mr. WILLOUGHBY: Originally we understood that the three dams in the Columbia system would cost in the neighbourhood of some \$400 million.

Mr. KEENLEYSIDE: About \$410 million.

Mr. WILLOUGHBY: Is that what the anticipated cost of the Peace development will be—in that area?

Mr. KEENLEYSIDE: The Portage Mountain project without transmission would cost somewhere in the neighbourhood of \$400 million.

Mr. WILLOUGHBY: So, actually in this particular sentence it is not to be assumed that the two are actually going to be on the same foundation. I think I have cleared my point. I do not know whether or not I have made myself clear to the Chair. Has any estimate been made in respect of what the 11 per cent tax is going to be in these costs?

Mr. KEENLEYSIDE: The total amount that will be added by the sales tax to the construction cost in Canada of the Columbia will be about \$8.7 million, I think.

Mr. DAVIS: Or about 2 per cent.

Mr. KEENLEYSIDE: The total for those storage projects and Mica generation is \$8.7 million.

Mr. GROOS: If that were eliminated, how much would the cost of Mica power delivered in Vancouver be reduced from the $3\frac{1}{2}$ or two mills?

Mr. KEENLEYSIDE: It would not make any great difference.

Mr. WILLOUGHBY: You have made a statement on page 10 of your brief to the effect the surplus will be approximately \$40 million; whereas we have been led to believe by other quotations it would be \$53 million. I know these are estimates.

Mr. KEENLEYSIDE: There are two different ways of considering it. The first way, in which you have the \$40 million left, is by paying all the capital costs and paying all the operating expenses as they occur. This gives you a surplus of about \$40 million.

Mr. WILLOUGHBY: And that is a true surplus.

Mr. KEENLEYSIDE: That is a true surplus.

Mr. WILLOUGHBY: And the cost of the installation of the machines at Mica would be extra.

Mr. KEENLEYSIDE: The other way is to pay the capital costs of the storage dams as they occur, and you would have about \$53 million left to pay half the capital cost of Mica generation.

Mr. WILLOUGHBY: What would be the estimated cost of the machinery at Mica?

Mr. KEENLEYSIDE: It would be about \$100 million.

Mr. WILLOUGHBY: And, that includes the 11 per cent tax as well?

Mr. KEENLEYSIDE: Yes.

Mr. WILLOUGHBY: Is there any definite plan for establishing a recognized new body which would try to encourage the tourist industry as well as recreational facilities, which are going to be developed as a result of this, in order to make it a real tourist attraction from a resort and business point of view? As you know, this is extremely important in respect of British Columbia.

Mr. KEENLEYSIDE: As you know, we have a very active Department of Recreation and Conservation. The responsible Minister at the present time is the Hon. Kenneth Kiernan, who is also a member of the board of B.C. Hydro and Power Authority and who previously was the vice chairman of the British Columbia Power Commission. I know the department are giving thought to using the advantages that will be developed in the way of resort possibilities and of tourist attractions in the Columbia river as a means for inducing more tourists to come to Canada. What is going to be done and where advertisements will be placed, as well as what other steps will be taken in this connection, I do not know; but I know that the department are very much aware of the Columbia potential for tourism and believe it is going to add very materially to the tourist attraction which Canada can exert, and there are plans for it.

Mr. HERRIDGE: Mr. Chairman, I have a series of questions to ask Dr. Keenleyside, and I make no apology for asking them because I have been asked by my constituents to obtain certain information.

As you know, a few years have gone by since the treaty was signed and we are informed that \$10 million has been spent in respect of investigation, and that there has been considerable planning done in respect of the relocation of communities which will be affected or completely flooded. Is that correct?

Mr. KEENLEYSIDE: Yes, Mr. Chairman, a good deal has been done.

Mr. HERRIDGE: Well then, what is the Authority's intention in respect of the people at Arrowhead?

Mr. KEENLEYSIDE: May I make a rather general statement in respect of this before going into details, Mr. Chairman.

The CHAIRMAN: Would you proceed, Dr. Keenleyside.

Mr. KEENLEYSIDE: I think I implied in what I said this morning that there are plans afoot to co-ordinate the work that has been done over the past three years with plans being made by the provincial departments that are concerned with these matters. We have appointed the best regional planner that we could find to take charge of this responsibility.

Among other things that we have had in mind for a long time, and which we hope he will be able to develop, is the possibility of establishing somewhere in the area, a model village which will attract a good many of the people who are now living in rather isolated areas and who are going to be affected by the flooding. Now, where that will be located has not been finally decided, but if we find there are enough people in the area who would like to move into or near such a village then we will very seriously consider the possibility of putting this in the Edgewood region.

With your permission, I think I will ask Mr. Milligan to give an answer in somewhat greater detail in respect of the question put by Mr. Herridge.

Mr. HERRIDGE: Would you mind mentioning the communities in sequence in order that you may let us know what is planned for each of these communities. What about Arrowhead?

Mr. MILLIGAN: May I, sir, at this time produce a map which will show what the plans are and how the whole area will be affected. I am sure this will answer your question.

This is a map of the Arrow reservoir. The green areas on the map are unaffected roads or unaffected communities. Roads which are going to be abandoned because of this flooding are painted orange, the same as is a community which is flooded and will have to be moved. Roads relocated to higher ground in the same general area has a reddish colour, and new roads required are painted in a much brighter red.

To start at the top, namely at Revelstoke, there is a part of Revelstoke which will be affected. Coming down on the east side of the river the road

will either be maintained or moved up the hill to a little higher elevation and relocated so that it can service the area known as Eleven Mile. We will maintain this. The existing road comes down to this point and crosses at Twelve-Mile ferry, goes along the west side of the valley, and crosses again at Twenty-Four-Mile ferry and on to Arrowhead.

It is our intention that this section from Eleven Mile will be abandoned and a new road from Revelstoke on the west side of the river will come down to the head of the lakes at Shelter Bay.

Moving on to the east side again, the existing road from Galena Landing goes south to Nakusp and is now a logging road of Celgar Co. The Department of Highways is discussing with Celgar the possibility of taking this road over and making it a public road. This road is used for north-south traffic.

The road from Galena Landing across to Beaton will not be affected, and it will connect with the section of road over to Kaslo. Going south from Nakusp the road will be relocated—and, this is provincial highway number 6—where required, up onto the higher elevations of the Lake shore, all the way down as far as Fauquier, where it will cross again to Needles and on over highway No. 6 to Vernon. There will be sections of the lower community at Edgewood where the road will have to be abandoned, as well as a section south of that point. There is no road between Edgewood and Renata which is passable at the present time and road access to the south to Castlegar presently goes across the Columbia by ferry and goes up on a very tortuous road to Deer Park, Broadwater and Renata. It is presently planned this road will be abandoned. The community of Renata will be completely inundated. There are very few people at Broadwater now. There are some summer cottages along here which will be below the high water level. Some people could remain at Deer Park above high water level but it is our intention to purchase that property and thereby abandon this road from Broadwater to a little place called Syringa creek. The C.P.R. railway from Revelstoke down to Arrowhead will be abandoned, or that is our intention, and the area will be served by a trucking service. There is a small section of the Arrow Lakes-Kettle Valley Railway, about three and a half miles of line, which will have to be relocated at a higher elevation.

Mr. HERRIDGE: The highways to which you have referred will be standard highways, is that correct?

Mr. MILLIGAN: These will be highways although some of the less important ones will not be as good as others.

Mr. HERRIDGE: Will there be a ferry from Shelter Bay to the other side?

Mr. MILLIGAN: There will be a ferry from Shelter Bay to Galena. We anticipate that the present ferry from Nakusp to Arrowhead will be abandoned in view of the fact that the road will run from Galena to Nakusp. As a matter of fact most of the traffic travels this route at the present time.

Mr. HERRIDGE: How many acres of land will you have at Edgewood for individuals who wish to be in this model village?

Mr. MILLIGAN: We have not purchased the property for this village as yet.

Mr. HERRIDGE: Have you any idea of the acreage involved?

Mr. KEENLEYSIDE: Mr. Chairman, perhaps I may be allowed to correct one suggestion that has been made. It is not our intention that people should necessarily live in the village. Some individuals like to live in more or less isolation. A man who for example has been living in a small cottage in the wilderness may want to continue living by himself rather than in a community but would, nevertheless, profit from living close to a community. We may be able to find areas along the lake within one, two or three miles

of the village where these individuals can build their cottages, live in isolation, yet have access to the facilities provided by the establishment of this village. This will depend on the number of people who desire to continue to live in this way. We estimate that the number will be in the neighbourhood of six or seven.

Mr. HERRIDGE: What land has been reserved for those individuals who want to continue to farm in this area? I understand there will be a substantial number of farmers flooded out.

Mr. KEENLEYSIDE: We estimate that the number of individuals involved in this regard will be small and we are not at this stage making provision for these people. However, we will naturally assist them to purchase other land if that is their desire.

Mr. HERRIDGE: There is very little linklihood of your being able to settle these people in the Arrow Lakes district because most of the good farming land will be inundated. You are not considering the relocation of farmers in the Arrow Lakes district; is that right?

Mr. KEENLEYSIDE: You know the figures as well as we do, Mr. Herridge. There is a good deal of land available there that is being passed off as farming land but which is, to say the least, marginal farming land. There is some farming land not in use and not likely to be put into use. Considering the land available, I think the number of people likely to remain in the area and continue farming can be looked after.

Mr. HERRIDGE: Do you think you can find land in this regard along the Arrow lakes?

Mr. KEENLEYSIDE: Unless the situation changes radically and a great number of people decide to farm in that area I feel we will be able to meet the requirements.

Mr. HERRIDGE: I am aware of the existence of a number of substantial farms in that area, and I am sure that the farmers will wish to continue farming. There are a considerable number of individuals who have small holdings and are quite happy with the low incomes they receive. The land involved is very fertile. I have cropped that land for a good many years although at a higher level than that area which will be flooded.

The CHAIRMAN: May I interject for a moment, Mr. Herridge? Is it agreeable to the members of this committee to have the maps to which we have referred included in our records?

Some hon. MEMBERS: Agreed.

Mr. KEENLEYSIDE: Mr. Chairman, I should like to add one further remark. We have comparable maps for the Duncan and Mica areas. There is not much information contained on them but they are available and can be included in your records if you so desire.

Mr. HERRIDGE: I think that is a worth-while suggestion, Mr. Chairman.

Mr. STEWART: Mr. Chairman, I should like to ask a supplementary question related to that question asked by Mr. Herridge. We have been given information in respect of the large number of farms of substantial size located in that area.

Mr. HERRIDGE: I did not say there were a large number of substantial farms in the area.

Mr. STEWART: How many are there located in the area?

Mr. HERRIDGE: I could not give you that figure off hand.

Mr. STEWART: I think the members of this committee should be given this information.

Mr. PUGH: This information is now included in the record, Mr. Chairman. An earlier witness indicated the number of farms located there, as well as the size of income to the owners.

Mr. KEENLEYSIDE: This information has been placed on the record but I can repeat it if you so desire.

Mr. STEWART: I think we should have this information at this stage of our hearings.

Mr. PATTERSON: This information would be of interest to the income tax department.

Mr. KEENLEYSIDE: The table I have before me indicates the acreage of agricultural land below the 1,460 foot contour level, which is the level up to which we are taking land, although the flooding will not go that high. This chart indicates the amount of isolated agricultural acreage above the 1,460 level. In other words, this covers the number of farms which will be affected. The acreage of orchard land is 200; isolated orchard land, 43; other crop land, 4,850. The amount of other crop land that is isolated amounts to 390 acres; aquatic hay pasture land amounts to 372 acres; isolated orchard land above the 1,460 level amounts to six acres, and the isolated other crop land above the 1,460 level is 32 acres. The total is 5,893 acres.

The distribution of affected farms according to the acreage and the importance of the land below the 1,460 contour level is, between one and 30 acres, 215; between 30 and 60 acres, 34; between 61 and 100 acres, 10, and between 100 and 165 acres, 1, making the total number of farms 260.

I would like to check the following figures I am about to give you because I wrote them down during the proceedings last week and am not sure I have them accurate. There were three farms which had a gross income of over \$10,000 a year, 105 farms with a gross income of less than \$1,200 per year. In this area there are approximately 50 farms that can be described as being, in a sense, commercial operations. Most of them are, as has been indicated, very small.

In that area which was discussed a few minutes ago between Revelstoke and Arrowhead, indicated by the brown patch on the map, there are two farms in operation which are of some measurable significance as farms. There are a great many people in the area who have farms which are producing some crops as vegetables and fruits for their own consumption, as well as perhaps some animals and chickens, doing this on more or less a subsistence basis. There are other individuals who are operating small farms, supplementing their incomes by working in the woods or in some other outside activity.

So that the total number of farms does not really represent the total number of people who are actively engaged in farming.

Mr. HERRIDGE: I would like to ask the following question: Suppose you have a case of a farmer whose land would be partly flooded and who wanted his home and buildings moved back to his own property, would that be done by the authority?

Mr. KEENLEYSIDE: Certainly.

Mr. HERRIDGE: At no expense to the farmer himself?

Mr. KEENLEYSIDE: Yes.

Mr. HERRIDGE: What consideration has been given to the cemeteries?

Mr. KEENLEYSIDE: Mr. Chairman, this has been a problem that in the beginning gave us a little bit of difficulty. We were concerned about it because of the emotional aspects that were naturally involved in the treatment of cemeteries. There are six cemeteries which are going to be affected: Mount Cartier, Arrow Park, Burton, Fauquier, Renata and Deer Park. These six are going to be flooded. We discussed the problem of what should be done about

the cemeteries with a great number of people and organizations in the area, and in the end we proposed to act on the recommendation of the head of one of the leading religious organizations in the area. The suggestion was to do this. We would remove the bodies of any persons whose existing living relatives wanted their bodies moved. In the case of those who do not desire to have the bodies exhumed and moved—and I think if anyone saw or took part in such a transaction he would never want to have it done to any relative of his—it is planned to cement over the cemetery area, to put a cover on in such a way that the wave action will not affect the bodies remaining in the area, to take the gravestones from the cemeteries and put them on the land nearby in a plot that will be prepared for that purpose, and to put a register, as far as is possible, of the people who were buried there, and also some kind of a plaque in the little area that will be prepared to hold the gravestones.

This seemed to us to be about as pleasant and reasonable a way of dealing with the matter as is possible in the circumstances. It is reverent in its relationship to the bodies of the people who have been buried there and it meets the wishes of most of the people with whom we have talked and who have relatives buried in the cemeteries.

We have put this to the public utilities commission which in British Columbia has control of the cemeteries, and we have their approval in principle for this kind of procedure. It does not mean that people who want to have their deceased relatives' remains moved cannot do so. We will do that if they insist on doing it but we are going to discourage them as much as we can because, as I have said, this is a very gruesome process. It seems to me it would be much more satisfactory and a much more reverent way to treat those who have died in the way that I have mentioned, that is to seal the graves properly and then to have a little area kept in decent order in which the gravestones recording their passing are kept as well as a register of the people who have been entered. This seems to me to be a much more sensible way of handling it and it has been received with general approval.

There were one or two communities in which apparently someone felt strongly opposed to it but it has been received with general approval. Some of those opposed to it in one or two communities convinced some of their neighbours that this is not the right thing to do and that every body in the graveyard should be moved. However, our hope is that most of the people will accept this proposal and that we will be able to act on it.

Mr. HERRIDGE: I would like to ask Mr. Milligan another question which I forgot at the time. During the hearings at Nakusp a great deal of concern was expressed about the protection of the foreshore, or what would be the banks or foreshore along the front of Nakusp. At that time someone giving evidence on behalf of the authority said that the building of a rip-rap across the town was being considered. I have two questions: How far back from the hotel is the British Columbia Hydro expecting to acquire property, and is the rip-rap going to be built along the front of the town to prevent erosion?

Mr. MILLIGAN: The bank in front of the hotel and along the foreshore will have to be protected from the wave action and the high water action. The wind blows down the lake and creates large waves at certain times of the year, and we will have to protect it with a rip-rap in this manner. I cannot describe to you just where this rip-rap is going to go but it will be in front of the hotel.

Mr. HERRIDGE: You are not going to expropriate behind the hotel to the lake at the back?

Mr. MILLIGAN: We will not acquire any more property than we have to. It is my understanding that this elevation is higher than what we would need for the protection of the bank at Nakusp.

Mr. HERRIDGE: You do not expect to disturb any of the present buildings above where the rip-rap will go?

Mr. MILLIGAN: No.

Mr. KEENLEYSIDE: Am I not right in saying that there are ten feet between the bottom of the hotel and the top of the flooded area?

Mr. MILLIGAN: Yes.

Mr. HERRIDGE: Will the whole of the front of the town be protected by the rip-rap?

Mr. MILLIGAN: It will be protected wherever it is needed.

Mr. HERRIDGE: As there are some very heavy south storms there it will be required all across the front of the town because there is a sandy formation there.

Mr. MILLIGAN: The bank will have to be stable, of course.

Mr. HERRIDGE: What is going to be done to provide a beach for the people of Nakusp because the present beach in front of the town will be flooded?

Mr. MILLIGAN: The town of Nakusp takes most of its recreation from a lake above the Nakusp area where most of the swimming is done. There will be a form of beach created because of the manner in which the foreshore will be protected. Whether it will be a sandy beach I cannot say, but there will be an area suitable for a beach if it is required.

Mr. HERRIDGE: I have a question with respect to the rehabilitation committee which has been mentioned.

The VICE-CHAIRMAN: Excuse me, Mr. Herridge, I gather these are a number of supplementary questions started by Mr. Willoughby.

Mr. WILLOUGHBY: I finished my questioning.

The VICE-CHAIRMAN: I have a number of other people on my list. I gather your questions started as a group of supplementary questions, and I was wondering whether you would mind very much letting other people put their questions first.

Mr. LEBOE: I would like to make a point of order. I hate to bring this up but I wonder whether it is not a fact that all the things we have been talking about have already been discussed by these people with the hydro authority and with the people who are concerned. It seems to me that we are completely off base here. I may be wrong but it seems to me that there are provincial representatives in those constituencies who deal with the province of British Columbia and under whose jurisdiction this lies. It seems to me we are away off base.

Mr. HERRIDGE: Mr. Chairman, I have been requested by these communities to ask these questions, and I think I am quite right in doing so. Furthermore, I intend to do so.

Mr. PUGH: Mr. Chairman, I suggest that all these matters of relocation and building up of beaches, and so on, come within the cost of building and within the system of the dams.

The VICE-CHAIRMAN: I have had some experience with these matters myself in my own province, and all over the country one finds provincial and municipal authorities working with federal authorities on these projects. While perhaps Mr. Leboe is technically correct in saying that these fall strictly within the rights of the provincial authorities, nevertheless it is really all part of one picture, of which this government is an integral part.

I think it would be the wish of the committee to allow various members to ask, within reason, questions affecting it in case the committee may find that there may be some gross injustices perpetrated by the provincial authorities, about which I think this committee certainly should know because this committee has some responsibility in that regard.

My own view is that I would not wish to restrict questions in this regard, although I think you have a technical point, Mr. Leboe. However, I do not think it would be wise to restrict the questions.

Mr. LEBOE: I have no intention of pressing the point. I merely wished to call the attention of the committee to the situation that is arising here, and to the broad base upon which we are moving all the time in connection with the tremendous amount of detail.

It seems to me that the terms of reference of this committee indicate that we are to decide whether or not this is a good treaty, and pass on it. This seems to me to be the real crux of the matter. If we are to become involved in such matters as whether there should be a stone wall or a wooden wall in front of a hotel, and all this sort of thing, there will be no end to the deliberations of this committee. It just seems to me we are moving away out in left field.

I will not press the point, Mr. Chairman.

The VICE-CHAIRMAN: Certainly the effects of this treaty have long ramifications like the stone in the puddle of water, and I do not think they should be heard by this committee.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I think, Mr. Chairman, the point is not very well taken. This committee and the parliament who appointed us are responsible for all of the treaty that will, after all, be endorsed by parliament, not by the provincial authorities.

The VICE-CHAIRMAN: Mr. Gelber, you had some questions?

Mr. GELBER: Dr. Keenleyside was introduced to us as Chairman of the British Columbia Hydro and Power Authority, and I would add that he was a distinguished representative of Canada in the United Nations Organization when he was director-general of the Technical Assistance Administration. He was the director-general of that administration under whose leadership it was built up to become the very significant aspect of United Nations that we know today.

I would like to continue the trend of questioning I was putting to Mr. Williston yesterday in regard to the correspondence between General McNaughton and Mr. Martin. There were certain aspects of that correspondence that Mr. Williston felt would be better handled by Dr. Keenleyside, and I therefore reserved my questions.

First of all, I would like to say that it has been suggested, Dr. Keenleyside, that you state that no informed expert apart from General McNaughton supports the McNaughton plan for Columbia development. How do you support this statement, and is it a fact that you made this statement?

Mr. KEENLEYSIDE: Yes, Mr. Chairman, I made the statement. I would continue to make the statement if the question were put to me again.

As I am sure the members of the committee now realize, if they did not before, this is one of the most complicated subjects that has ever come before a legislative body. The complexities that are involved in the engineering, financial, political—and international, if you like—problems that are all part of this treaty or are in the background of this treaty are so complex that I do not mind admitting that after working with it myself for about four years, and having some of the best advice that anyone could possibly obtain, I still find it is difficult to appreciate the significance of all the problems that keep on cropping up in relation to it.

When my use of the words "uninformed opinion" was questioned, I began to think back and see what it was I really was talking about when I used those words. I put down here, in anticipation of some such inquiry or in case the matter might be brought up again, an indication of what is involved in the acquisition of an informed opinion on the subject that we have been discussing.

In order to have an informed opinion here, it seems to me the person concerned would have to have a pretty comprehensive knowledge of a good many rather specialized fields. He would have to know something more than a little about hydrology, about engineering design relationships, about costs and general economics, about the operating characteristics of hydroelectric power developments. In addition to having a basic knowledge of this sort of thing, he would need to have a pretty lengthy period of actual experience in these fields in order to recognize the complex relationships of many of these factors and their relative significance.

In addition to all this, it would seem to me that to have an informed opinion on what we have been talking about—and using that term in its proper sense—such a person would have to have full access to either the basic data and the resources necessary to use them, or to the pertinent engineering reports on stream flows and other hydrological data, on existing and planned power installations together, of course, with their operating characteristics, their capacities, their costs, site explorations, alternative schemes of development with the output costs on each of them, and so on.

I could go on and expound on that for some considerable time, but I do not think you would want me to take the time to do so.

MR. CAMERON: (*Nanaimo-Cowichan-The Islands*): Would Dr. Keenleyside not add to that as one of the requirements of really “informed opinion” some experience in negotiating with United States representatives over a long period of years on these problems of joint development of the Columbia river?

MR. KEENLEYSIDE: I think perhaps it would be a very useful thing to have certainly, but if you started with the kind of background I have described it would not take very long to get into an informed discussion with United States representatives about the Columbia.

As this subject has been raised, I think it is only proper that I should refer to the statements that were made in the House of Commons, in regard to my use of this term. I refer in particular to the *Hansard* debate of February 27 last in which the hon. member for Kootenay west said:

Now I come to Dr. Keenleyside. He has often said that no other expert in a position to understand the Columbia supports the general’s—

That is General McNaughton’s.

—views. This is a completely false statement. As evidence I mention a partial list of those who have said that the treaty is a poor deal for Canada.

Notice, we suddenly go through a transition here. My statement that no other informed expert supports General McNaughton’s view is now translated into “opposition to the treaty” by the people who are just about to be named.

However, he went on to say that this was evidence proving that what I had said was a “completely false” view. In other words, the impression is designed to be left that because these people oppose the treaty they support General McNaughton’s position. So he lists Mr. E. G. Cass-Beggs, of the Saskatchewan Power Corporation; Professor J. F. Muir, head of the civil engineering department at the University of British Columbia; Mr. R. Deane, who is a senior electrical engineer of Consolidated Mining and Smelting Company; Mr. Larratt Higgins of the Ontario hydro, and Mr. F. J. Bartholomew.

Just as a matter of interest, I checked with some of these people who have been listed as being opposed to the treaty and in consequence as supporting General McNaughton’s point of view. Mr. Cass-Beggs, an old friend of mine, a man for whom I have a very high regard, is certainly one of the leading members of his profession in Canada. He told me that he has never gone on record in support of General McNaughton’s position on the treaty. He said that he has

reservations about some aspects of the treaty and in particular about the question of diversion, because he wants to be able to divert to Saskatchewan. But he says that he never stated that he supported General McNaughton's position.

I had some correspondence with Mr. Deane of Consolidated Mining and Smelting Company, and all that Mr. Deane would say was that he was opposed to some aspects of the treaty and he supposed to that extent that he was in support of General McNaughton.

I also inquired of Professor Muir, head of the civil engineering department of the University of British Columbia, and I have a letter here from the professor which reads in part as follows:

"Because we had insufficient engineering cost data available on the McNaughton proposals we meticulously avoided taking any stand on the relative merits of the McNaughton and treaty plans of development of the Columbia.

'My position on the proper sequence of power development' now differs slightly from the conclusions given in my letter to the editor of the Engineering and Contract record (see copy attached). I would now revise clause 2 as follows:

"Proceed as soon as possible with the Columbia river development, including the Mica power plant, on the basis of the treaty, protocol, and terms of sale agreed upon between Canada and the United States on January 22, 1964".

Mr. HERRIDGE: Dr. Deane wrote to me supporting fully General McNaughton and what I said. He wrote to me and told me about your having written to him. Read what I said about Mr. Deane, the whole piece.

Mr. KEENLEYSIDE: Certainly. You said "that Mr. Deane, who is senior electrical engineer of Consolidated Mining and Smelting Company—I must be exact and say he is speaking for himself."

Mr. HERRIDGE: Yes, he is expressing his own view, and he quite agreed with that statement, and he wrote to me and told me, and he was quite right.

Mr. KEENLEYSIDE: It is tricky practice to say as you do "as evidence of support of General McNaughton's plan I mention a partial list of those who have said that the treaty is a poor deal". You also said that this was evidence that what I said was a "completely false" statement. But all you can really say is that some of these people were opposed to the treaty; and not that they support General McNaughton's plan. Very tricky indeed.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I would put it on the opposite basis. Dr. Keenleyside has said that no informed opinion supports General McNaughton's stand. I presume that this means that he has consulted a number of people who have these rather impressive qualifications that he has listed. I wonder if he could give us the names of those who have been consulted.

Mr. KEENLEYSIDE: I am not sure what the question is.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You have told us that there are people with informed opinions on the matter who do not support General McNaughton. I would like to have the names of some of those with these informed opinions, with their qualifications to see if they fall within this impressive list.

Mr. GELBER: That is hardly a supplementary question because I understood Dr. Keenleyside's statement was the reverse, the other way. What he said was that there were other well informed people who supported General McNaughton.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): He could not reach such a decision unless he had consulted with those very people.

Mr. GELBER: I do not think it is a supplementary question to my question.

The VICE-CHAIRMAN: Perhaps Dr. Keenleyside might care to answer, in order to save time.

Mr. KEENLEYSIDE: I think that according to the definition used, it would be very reasonable and natural that the number of people in Canada who have "informed opinions" on this subject is pretty small. There are not very many who have had an opportunity to apply the kind of background I have discussed to the study of the information that has been available. The people who have done that are people who are in the departments of the federal government, of the provincial government, and in the companies, the consultants, the engineering firms that have been asked to study the river. Now, this would include General McNaughton himself, of course, because he was in on these discussions. But so far as I know there is no other person in Canada apart from those I have listed who can claim to have an "informed opinion" of the kind we have been talking about.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): No person except General McNaughton?

Mr. KEENLEYSIDE: Apart from those I have listed.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Are you saying there is no one else in Canada?

Mr. KEENLEYSIDE: No, I did not say anything of the kind. What I said was that the people in Canada who have an informed opinion on this subject, according to the definition I have used, are the experts in the federal services who have been working on the river; people in the provincial services who have been working on the river, and people in the engineering firms and consulting firms who at one time or another have been assigned to the duty of studying the river. Nobody else is in a position to have an informed opinion. Everyone in those services, the federal government, the provincial government, and as far as can be judged from the statement they have made, the heads of the consulting firms, and people working in the consulting firms, have said that they disagree with General McNaughton and that they agree with the treaty in comparison to General McNaughton's plan.

Mr. GELBER: I have a number of questions, but perhaps you would care to adjourn now.

The VICE-CHAIRMAN: I was going to suggest that we adjourn now to re-assemble tomorrow morning at ten o'clock when Dr. Keenleyside will be able to be with us up until noon.

Mr. KEENLEYSIDE: Until one thirty.

The VICE-CHAIRMAN: There are a number of people who wish to ask questions. I have on my list the following names: Messrs. Gelber, Chatterton, Cameron, Kindt, Pugh, Macdonald, Ryan, Davis, Stewart, Herridge and Deachman.

Mr. BREWIN: I put my hand up about three hours ago.

The VICE-CHAIRMAN: I am sorry. I shall add your name.

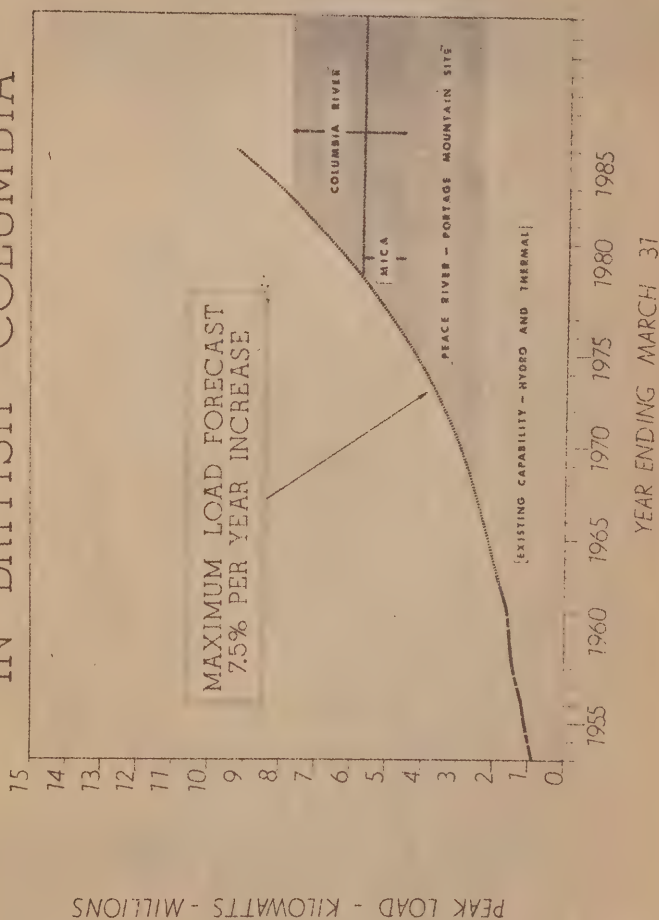
Mr. BREWIN: It is supplementary to something Mr. Fairweather said.

Mr. DEACHMAN: Would you please add my name to the list?

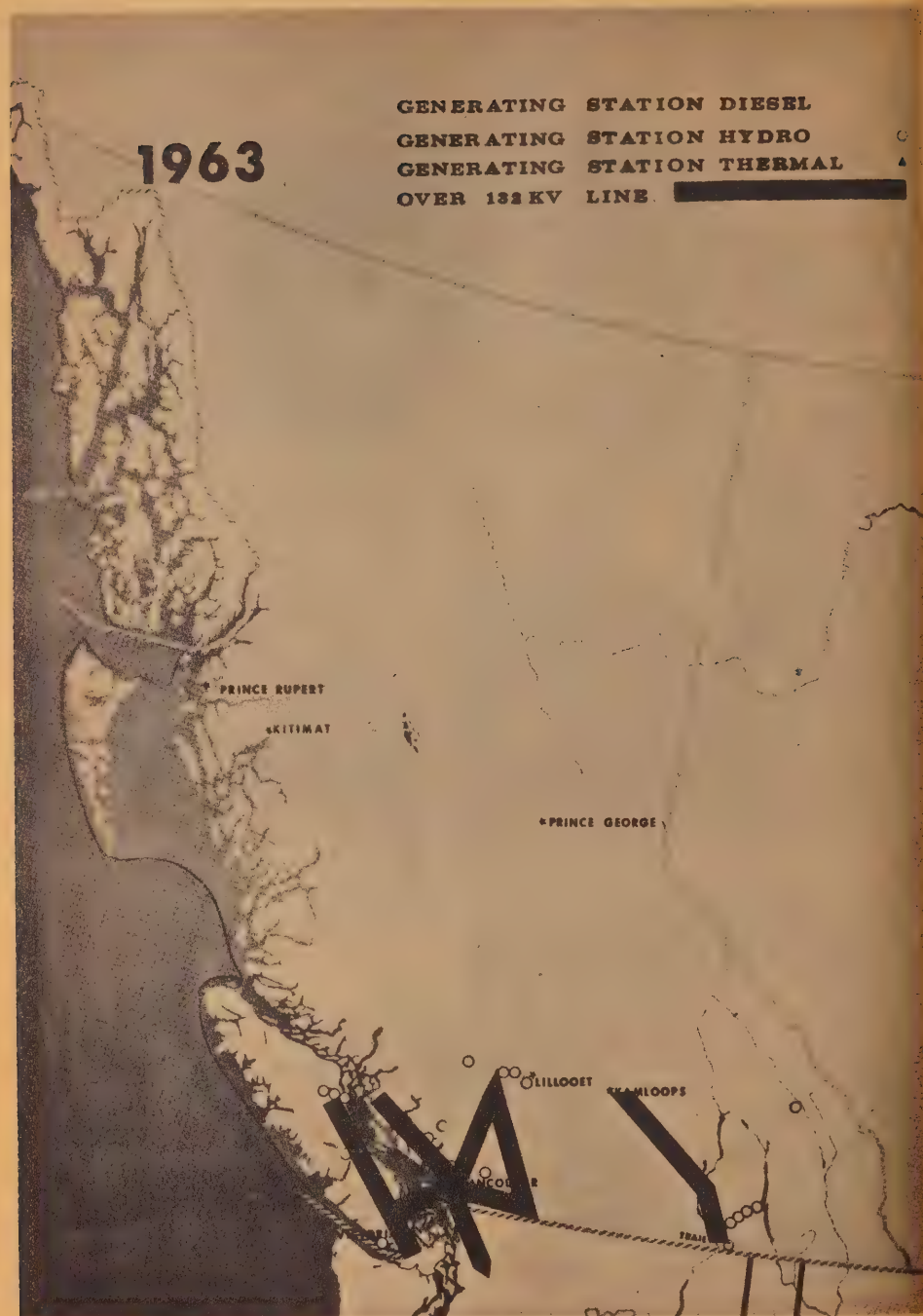
The VICE-CHAIRMAN: Yes, I have it. Now before anybody gets away it is suggested that in view of the fact that we have had a great many meetings this week we might not meet on Friday or tomorrow afternoon after Dr. Keenleyside leaves us. The next meeting would be on Monday when General McNaughton will be here.

Appendix F

POWER RESOURCE DEVELOPMENT TO MEET PEAK LOAD GROWTH IN BRITISH COLUMBIA



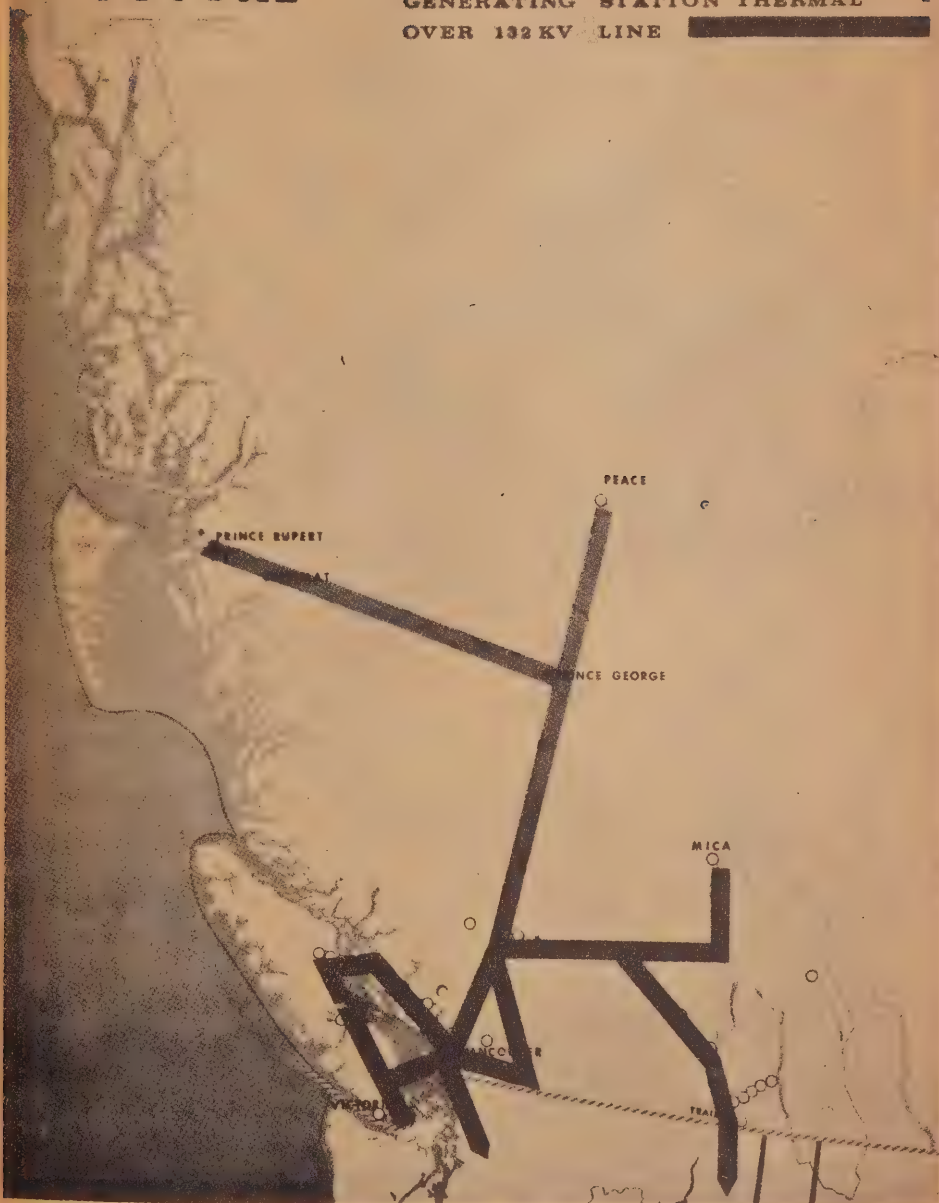
Appendix G



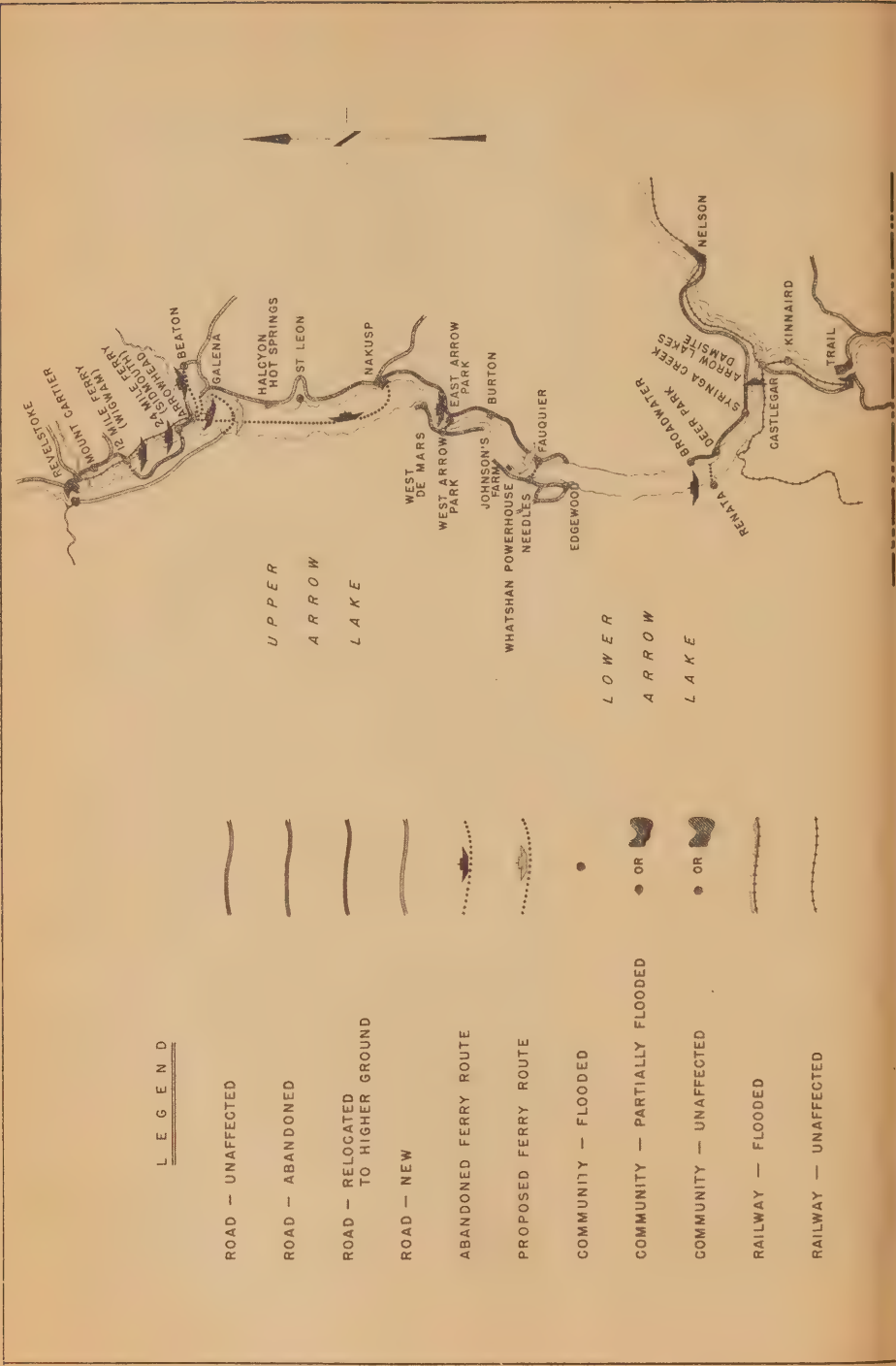
Appendix H

FUTURE

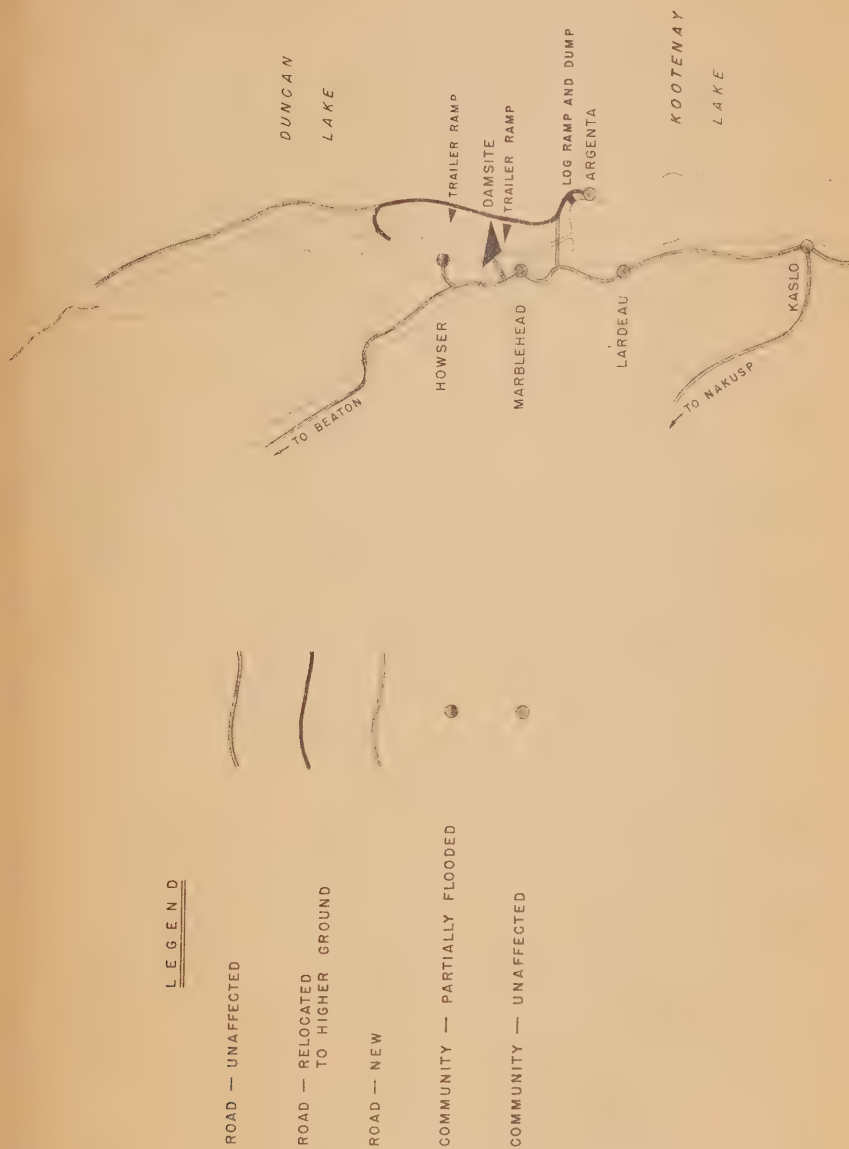
GENERATING STATION DIESEL
GENERATING STATION HYDRO
GENERATING STATION THERMAL
OVER 132 KV LINE



Appendix I

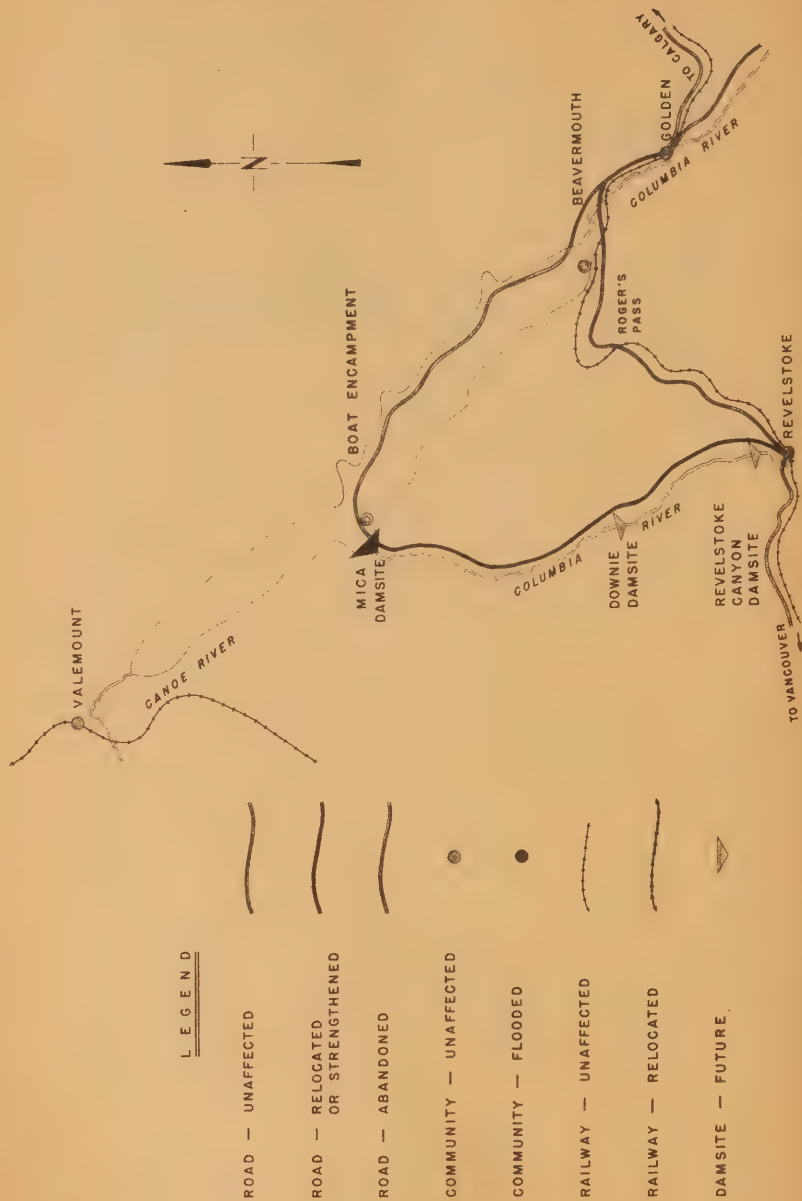


Appendix J



"The original of this map is available for reference in the Committees Branch,
House of Commons."

Appendix K



HOUSE OF COMMONS

Second Session—Twenty-sixth Parliament

1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 8

THURSDAY, APRIL 16, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESS:

Dr. H. L. Keenleyside, Chairman,
British Columbia Hydro and Power Authority

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--------------------------------|----------------------------|----------------|
| Brewin, | Fleming (<i>Okanagan-</i> | Macdonald, |
| Byrne, | <i>Revelstoke</i>), | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Forest, | Martineau, |
| Cameron (<i>Nanaimo-</i> | Gelber, | Nielsen, |
| <i>Cowichan-The Islands</i>), | Groos, | Patterson, |
| Cashin, | Haidasz, | Pennell, |
| Casselman (Mrs.), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Langlois, | Turner, |
| Dinsdale, | Laprise, | Willoughby—35. |
| Fairweather, | Leboe, | |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

THURSDAY, April 16, 1964

(15)

The Standing Committee on External Affairs met at 10.00 a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Brewin, Byrne, Cameron (Nanaimo-Cowichan-The Islands), Chatterton, Davis, Deachman, Fairweather, Gelber, Haidasz, Herridge, Klein, Laprise, Leboe, Macdonald, Matheson, Nesbitt, Patterson, Pugh, Ryan, Stewart, Willoughby—(22).

In attendance: From the British Columbia Hydro and Power Authority: Dr. H. L. Keenleyside, Chairman; Mr. W. D. Kennedy, Division Manager, Economic and Commercial Services; Mr. J. W. Milligan, Reservoirs Engineer; Mrs. P. R. Kidd, Assistant Secretary; From the B.C. Department of Lands, Forests and Water Resources: Mr. Gordon Kidd, Deputy Comptroller of Water Rights.

The Chairman reported that correspondence concerning the Columbia River Treaty has been received from W. C. and W. D. Jowett, Edgewood, B.C.; J. D. McDonald, Rossland, B.C.; Mrs. N. F. Hall, Sidmouth, B.C.; Mr. and Mrs. H. Gaskell, Nelson, B.C.; Joint Council of Unions of the British Columbia Hydro and Power Authority, Vancouver; International Union of Mine, Mill and Smelter Workers, Toronto; Donald Waterfield, Nakusp, B.C.

Dr. Keenleyside read into the record a letter from A. W. F. McQueen, President of Caseco Consultants Limited, Vancouver.

The Committee resumed questioning of Dr. Keenleyside.

The questioning being concluded, Dr. Keenleyside, by leave, made a personal statement concerning the Canadian negotiators of the Columbia River Treaty and Protocol, their senior officials and technical advisors.

At 12.45 p.m. the Committee adjourned until 4.00 p.m. Monday, April 20, 1964.

Dorothy F. Ballantine,
Clerk of the Committee.

NOTE: The figures requested by the Committee at the meeting of April 10, 1964, on benefit/cost studies are included in this issue as Appendix L.

EVIDENCE

THURSDAY, April 16, 1964

The CHAIRMAN: Gentlemen, I see a quorum.

I would ask Mr. Gelber to continue with his questioning. However, before he does so, Dr. Keenleyside has one thing he would like to say.

Dr. H. L. KEENLEYSIDE (*Chairman, British Columbia Hydro and Power Authority*): The first thing, Mr. Chairman, if I may, is to present to the committee a letter dated March 13th I have received from the president of Caseco Consultants Limited. This letter from Mr. McQueen was written because he will not be able himself to appear before the committee having recently had to undergo an operation. He is not in a physical state to come here.

The letter reads as follows:

Dear Dr. Keenleyside:

As you are aware, I had hoped to have the opportunity of appearing before the committee of external affairs and presenting my opinion about the Columbia river treaty, the protocol and related documents. Unfortunately, for reasons of health, which are urgent though temporary, it does not now appear to be possible for me to carry out this expectation. If you should wish, therefore, I would be grateful if you would make on my behalf the following statements before the committee.

1. I regard the various agreements reached under the treaty and protocol for the development of the Columbia river to be highly advantageous to Canada and to the province of British Columbia. The various projects, in my opinion, are well conceived and will assure the maximum use of the very large power resources of that river in Canada under a time schedule matched to the growing needs of this country. The financial arrangements are such that this huge power potential can be produced at extremely attractive rates.

2. Though the Mica dam is a high one—

Caseco Consultants Limited are the consultants on the Mica dam.

—its dimensions on completion will not be without precedent. Thorough investigations, made on behalf of the authority, assure that the foundations and the abutment rocks are sound and more than adequate to sustain the loads which the various structures will impose upon them. Fill material for the dam is plentiful and of good quality.

3. As arranged with the authority, we have retained a group of specialist consultants to advise us on all important aspects of the design of the Mica creek project. These engineers rank among the world's leading authorities in their respective fields. There are two considerations uppermost in the minds of these experts and in our own—first, that all elements of the project will be as completely safe as expert knowledge in design and sound construction

can provide, and, second, that the full development of the power resources of the river basin, as envisaged by the treaty, will be secured. We are fully satisfied that these demands will be met.

I regret that I cannot convey in person these opinions to the committee.

Yours sincerely,

A. W. F. McQueen,
President.

Mr. Chairman, Mr. McQueen was the president of Acres and Company which, as you know, is one of the outstanding consulting firms in Canada. For the last four years he has been president of the consortium that has been working for us on the Mica dam. I think it is a fair statement that in any list of the top ten of any experts in this country his name, of course, would be included.

Then, Mr. Chairman, may I refer briefly to a statement made by the hon. member for Kootenay West the other day. He reported to the committee that in a speech I made in Vancouver, I believe, on December 1961, I said that we hoped to get five mills per kilowatt hour in United States funds. The hon. member was quite correct; I did say that and I should not have said it. I can only explain this lapse on the basis that we had been talking about the mill rate at a time when the Canadian dollar and the United States dollar were in a more equal position than they are now, but by the time I made that statement the United States dollar was, in fact, at a premium of 4 per cent. Obviously, I should not have made the statement and I am sorry I did so.

The CHAIRMAN: Before the questioning commences, I should report correspondence. I am only reporting new correspondence which has been received since the last meeting, and not replies: W. C. Jowett and W. D. Jowett; J. P. Edgewood, British Columbia; J. D. McDonald, Rossland, British Columbia; Mrs. N. F. Hall, Sidmouth, British Columbia; Mr. and Mrs. H. Gaskell, Nelson, British Columbia; Joint Council of Unions of the British Columbia Hydro and Power Authority, Vancouver; International Union of Mine, Mill and Smelter Workers Toronto; Donald Waterfield, Nakusp, British Columbia.

Mr. HERRIDGE: A good collection of farmers, one engineer, and other good citizens from the Arrow lakes area.

The CHAIRMAN: Thank you, Mr. Herridge.

Mr. GELBER: Dr. Keenleyside, I would like to ask you some questions arising from General McNaughton's correspondence with Mr. Martin; but before I do could you tell us what is your familiarity with the Arrow lakes region of British Columbia?

Mr. KEENLEYSIDE: Mr. Chairman, my familiarity with the Arrow lake region goes back to the year 1899 when I made a brief visit there. I am afraid I did not make a very accurate study of the economy of the region at that time but I did pass through, and since then I have been in the area many times. I have travelled up and down the lake on the old *Minto* and other boats that are used to ply those waters. I take second place to no one in my enthusiasm for the beauty of the region or in my concern for the people who live there under present conditions.

Mr. GELBER: General McNaughton in the preliminary minute of his meeting with Mr. Martin, dated July 18, suggests a number of principles for the treaty. He said:

1. As much of the water which is stored in Canada as possible must be stored at as high an elevation as supply permits. This allows the best physical use of this resource for both countries and provides the most flexibility for all time to adapt to changing needs as these needs develop. (The first of these will be an increasing need for irrigation).

2. Control of the waters stored in the Canadian part of the basin must remain in Canadian hands, just as the United States insists, rightly, on complete control of its flows.

3. Over and above the development that each country does for itself, the further benefits that can be achieved by co-operative effort must be shared equitably.

Then on the 23rd day of September, 1963, in his letter to the minister, General McNaughton says:

Your suggestion that in an assessment of relative advantages received, the \$64 million payment to Canada should be increased by a share of our power benefits, in my view relates to another transaction and is not relevant to the flood control comparison I have made, which, as stated, represents a very modest expression of the immense benefits which the United States receives and which are drastically undervalued in the \$64 million arrangement proposed.

I wonder whether you would comment on that, Dr. Keenleyside. He said in the letter October 31, 1963, further:

The result is that the actual flood control benefit from the operation of the treaty storages is very much more than double the \$64.4 million present worth figure evolved by the negotiators.

Mr. KEENLEYSIDE: Mr. Chairman, in answer to Mr. Gelber's question, this whole question of how the flood control benefits were estimated is set out in great detail in the white paper which has been provided, and I would assume the committee would not wish me at this time to rehearse everything that has been said in that presentation.

I think the principle that was applied is a very sound one. I think we received in the arrangements which have been made a fair price for the service that we are rendering to the United States; and certainly the agreement that was reached in respect of flood control is in accordance with the flood control principle stated by the International Joint Commission in its report.

With regard to these specific points you mentioned, Mr. Gelber, firstly, in respect of the beginning of the letter dated July 18, which states that as much as possible of the water which is stored in Canada must be stored at as high an elevation as the supply permits is, of course, a sensible and proper assessment of the physical desirability of doing that. But, in order to get the maximum advantage from the arrangement with the United States the storage in Canada had to be placed at a point or points where it would give to us and to the United States the greatest possible advantage in the joint use of those waters. When the letter goes on to say that the control of the water stored in the Canadian part of the basin must remain in Canadian hands. Well, it does, as anyone can see from reading the papers which have been submitted: the documents, the treaty, the protocol and so on, except to the extent that we have undertaken, for a very high and gratifying price, to control these waters in accordance with certain needs in the United States.

Now, if we were going to use the waters entirely for our benefit and without any reference to the needs of the United States that country would not pay us \$254 million; you have to give them something in return.

The third point which is made is that over and above the development that each country undertakes for itself, the further benefits that can be achieved through co-operative effort must be shared equitably. This is a good statement of principle but it is not of any particular significance in respect of what we are speaking.

Mr. GELBER: Do I understand then that the question of storage is not only a question of the highest point physically but also the question of whether or not it is economical?

Mr. KEENLEYSIDE: Yes, of course. The arrangement that was made was to put the storage in the place or places where it would not only be the most beneficial to Canada from the standpoint of use within Canada for domestic and consumptive purposes, and for power generation in Canada, but also make it possible to use part of that water in order to get the immense benefits which the payment made available to us will provide.

Mr. DAVIS: Mr. Chairman, I have a supplementary question.

Is it not also a question of physical availability of water? It is my understanding that of the total flood flows originating in Canada more than one half originates below Mica creek?

Mr. KEENLEYSIDE: Yes, between Mica creek and High Arrow you get as much water into the Columbia as in the whole area of Mica creek.

Mr. DAVIS: So, if physically you were going to control the flood flows you have to have storages below Mica creek as well as above?

Mr. KEENLEYSIDE: Yes. This brings up the whole question of the significance of High Arrow in this series of projects. It has been repeatedly pointed out that High Arrow, in many instances, is the essence of the whole program.

There never has been a case—and this, I think perhaps might be underlined—in the whole study of this problem in British Columbia in which the provincial government has not included the High Arrow because it has been clear that this project is of immense benefit in respect of the downstream benefits received from the United States and without it it will not be possible to get the generation in Mica that we must obtain out of that storage.

Mr. DAVIS: So the arguments are both physical and economical?

Mr. KEENLEYSIDE: Yes.

Mr. GELBER: In his letter of December 12, to the minister, General McNaughton said:

There is no indication that any comprehensive computer studies have been carried out on the effects on supply to the Canadian load of regulation of the three treaty storages under the conditions specified in the treaty. In consequence, there is no real assurance as to either the downstream benefits to be delivered to Canada and—of increasing importance with the passage of time—of the actual benefits to Canada at site generation which we will be able to obtain.

Mr. KEENLEYSIDE: Mr. Gelber, would you mind telling me where that is.

Mr. GELBER: That is in the letter of December 12, the fourth page and the second paragraph from the bottom.

Mr. KEENLEYSIDE: Is that the paragraph starting:

There is no indication that any comprehensive computer studies...

Mr. GELBER: Yes.

Mr. KEENLEYSIDE: When Mr. MacNabb was on the stand the other day he presented a copy of a report which is now in the record which indicates very clearly what had been done by the federal government in respect of the studies that have been made by the provincial authorities, and this certainly can be described as being comprehensive computer studies.

Of course, in addition to that we have had studies made by Crippen Wright, by the Montreal Engineering Company Limited, and shorter studies by our own consultants, particularly Caseco.

May I just add one further thing. It has been pointed out to me that this is described in some detail on pages 63 and 64 of the blue presentation.

Mr. GELBER: Then, on the fourth page of General McNaughton's letter to Mr. Martin dated September 23 it says, in respect of Montreal Engineering Company Limited:

In a footnote on page 24 and re-emphasized on page 25, Montreal Engineering asserts that the criteria of operation of the Canadian storage prescribed in annex A para (7) will result in Canadian output less than might otherwise be obtained and point out that no study has yet been made to determine the net result. Here is a report commissioned by the government of Canada and you have been warned that no study has yet been made to determine the net result of the operation of Mica for system benefits when this plant is machined. I pose this question! How do you justify the repeated assurances that have been made that Canada's interests will be adequately protected by this treaty.

Mr. KEENLEYSIDE: I am told that the point which is raised in this paragraph has been under study and that at a later point in the hearings the result of this last study will be presented to the members of the committee.

Mr. GELBER: Mr. Chairman, I should like to make one further comment in respect of a letter dated March 5, 1964 in which General McNaughton states:

I note that in a number of places you have expressed similar anxieties to those which I have brought to your attention, but when I have come to the executive clauses of the protocol as now drafted, I find that no corrections have in fact been made to limit the extravagant powers which were to be vested in the U.S. by the treaty. In fact, in a number of cases, by the use of imprecise language it appears that the damaging effects on Canadian interests have been enhanced.

That is a letter addressed to the minister dated March 5, 1964.

Mr. KEENLEYSIDE: Mr. Chairman, I think all that can be said about the excerpt from the letter which you have quoted is that it is an expression of a personal opinion with which, as far as I know, none of the other people who have been in a position to study these matters and to have what I previously described as informed opinion about the subject, would agree.

Mr. GELBER: Thank you very much.

The CHAIRMAN: Mr. Chatterton?

Mr. CHATTERTON: Mr. Chairman, my question was asked by someone else yesterday.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): There is one further question I should like to ask Dr. Keenleyside although perhaps he is not in a position to answer it. I should like to find out whether Dr. Keenleyside can give me some information in respect of a matter in this treaty with which I am most concerned, namely the question of water per se, and possible diversion of this water.

I realize, of course, that your responsibility lies in the production of power but I would imagine as chairman of the authority you were in fairly close contact with all the negotiations and decisions to be adopted. Was there any consideration given to water per se as apart from water as a means to produce hydroelectric power? Was there any thought given to the increasing value of water in years ahead as distinct from the value of water as a factor in the production of power?

MR. KEENLEYSIDE: Mr. Chairman, I think Mr. Williston gave a fairly detailed answer to that question. He pointed out that the problem of the general use of water and the general value of water, for multiple use purposes, has been under review by the various departments of the provincial government over a great many years. To some extent these departments have contrary views about how water should be used and it is the responsibility of the government to decide between these views as to which should be adopted, and which would produce on balance the best results for the people of the province. I do not know that I can go beyond that.

I am aware that there are conflicting interests involved here and that one person might decide a specific example in one way and another person may decide it in another. The ultimate responsibility, of course, is that of the provincial government. It has certainly been aware of the seriousness of the problem and has made its decision with which, as far as I am competent to judge with my relatively brief relationship with this whole problem in British Columbia, I would be inclined to agree. Certainly in connection with the treaty I find it difficult to think of any alternative that would produce for the people of the province the kind of economic benefits that will come from the use of this water for power purposes in Canada and the profits that will be derived from the uses of this water in the United States.

MR. CAMERON (*Nanaimo-Cowichan-The Islands*): I notice you have mentioned once or twice when you have been speaking, and quite rightly, of course, that the responsibility of the government of the province of British Columbia is to the people of that province. Would you say that the government of British Columbia has had any thought about the importance of the responsibility to make available at a price some of a resource, of which it has a very large supply, to other parts of the country which have less, in view of the present situation in this country?

MR. KEENLEYSIDE: Mr. Chairman, I cannot pretend to tell Mr. Cameron what has been in the minds of the individual members of the government over the years, or the government as a whole.

MR. CAMERON (*Nanaimo-Cowichan-The Islands*): Perhaps I should not have asked that question.

MR. KEENLEYSIDE: It was pointed out by Mr. Williston, or Mr. Bonner, the other night that with regard to the specific case that we are talking about, the waters of the Columbia, there has been no representation from Alberta in regard to any interest in those waters. There has been no official representation even from Saskatchewan. All the Saskatchewan government has done has been to make public statements and to protest to Ottawa. They have never discussed this subject with the province of British Columbia. It would seem to me to be an elementary first step in any question of this kind, and I think proper, for that government to discuss the situation in the first instance with the owner of the resource.

MR. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes. That is perhaps an interesting question to ask Mr. Cass-Beggs when he comes before us.

MR. KEENLEYSIDE: I could answer that question now. Mr. Cass-Beggs came to British Columbia. He had a brief interview with two or three members of

the staff of the water resources branch. He had a very short interview, asked for and obtained, at the last minute with Mr. Williston, but after all, this could hardly be described as an official intervention or request from the government of Saskatchewan to the government of British Columbia. Surely any premier, if he can write so many letters to the federal government on this subject, could write at least one letter to the provincial premier.

The CHAIRMAN: Excuse me, gentlemen. I have been asked to request individuals asked and answering questions to endeavour to speak just a little louder.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am sorry.

Those are all the questions I wish to ask at this time, Mr. Chairman.

Mr. BYRNE: Mr. Chairman, I should like to ask another question in relation to the question just asked.

The CHAIRMAN: Is this supplementary?

Mr. BYRNE: I would rather refer to it as a question in relation to the last question rather than a supplementary question as they have become something of a farce.

Perhaps I should direct this question to an international lawyer or someone from the attorney generals department. Mr. Keenleyside, can you tell this committee in what mode or manner the province of British Columbia could establish a prior right to that water for use in other provinces some 15, 20, 30 or 40 years hence as it is required without still being subject to damages under the boundary waters treaty of 1909? Subject to damages when we decide to use that water, if we had already established a prior right by building a dam, diverting the water or making some use of it in Canada, how would the provincial government provide that water 30 or 40 years in the future? They could use all or any of the water from the Columbia to be diverted to the prairies if they did not have a treaty such as this; is that right?

Mr. KEENLEYSIDE: I suppose it would be within the real of physical possibility, Mr. Chairman, for the provincial government to come to the conclusion that sometime in the hypothetical future there might be a hypothetical need for this water and could, so far as an existing government can commit a government that is not yet born, decide to do nothing about the river because some time in the distant future it may be needed for some other purposes.

Mr. BYRNE: Having done nothing with the water and it continued to flow into the United States, and the United States established a right to it by making installations or diverting it for consumptive uses in one way or another, when we determined that we wished to use the water would we have to compensate in the courts, thereby creating an additional cost in respect of pumping water to the prairies?

Mr. KEENLEYSIDE: Under the terms of the boundary waters treaty, of course an upstream country can divert if it wants to. However, it becomes subject to claims for damages by the downstream country. It is your question, then that if in the meantime the United States had made more and more use of the water in the Kootenay or in the Columbia, and then 40 years from now a request was received from Alberta or Saskatchewan to divert substantial amounts, the claims of the United States would be correspondingly larger than they would be now for any damage that was created?

Mr. BYRNE: This is what I am trying to determine: Is there any conceivable project at the moment that would in any way carry the cost of construction in order to establish a prior right? Have these people who were saying we should preserve this water for diversion come up with any solution? Even the McNaughton plan does not provide a solution to this problem as it is establish-

ing a right to the water under the agreement. Is there any conceivable plan establishing a prior right without costing us more than we could afford to pay?

Mr. KEENLEYSIDE: I do not know of any plan; perhaps the Saskatchewan government has a plan in mind but they have not told us.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I have a supplementary question: Does Mr. Keenleyside know of any provision in the boundary waters act by which the United States could claim damages in the hypothetical case brought up by Mr. Byrne except for damage to navigation on the river? Article II limits it to navigation interests on its own side of the boundary—the only basis on which damages could be sought. There is no navigation now on the Columbia river.

Mr. BYRNE: I certainly do not agree with that.

Mr. KEENLEYSIDE: There is navigation on a good many parts of the Columbia river, if I may say so, Mr. Cameron. Apart from that, you have to take into account that the boundary waters treaty can be wiped out in one year by a unilateral decision of the United States, whereupon the general principles applying in international law come into effect. While I agree there is a good deal of doubt about what those general principles are—they are now in somewhat of a state of flux—nevertheless under any normal interpretation of the present feeling in this field we should certainly be open to attack for doing anything in Canada which had a serious effect on the economies or other resources in the United States.

Then of course you have to take into account the political reality as well. I apologize for talking about political matters in this body but the fact of the matter is that if we were to do anything in relation to the waters on the Columbia which produced a really serious result in the United States, it would immediately become more of a political issue than a legal one.

Mr. BYRNE: Following along that line, is there anything in Article II of the boundary waters treaty that mentions navigation, because this is not entirely a question of diversion?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Certainly—read the second paragraph. It limits the claim for damages.

Mr. KEENLEYSIDE: However, the first paragraph says that any action of this kind:

shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs;

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): It is still limited by the second paragraph.

Mr. BYRNE: The second paragraph deals with another question, not with diversion.

Mr. MACDONALD: Mr. Chairman, I would like to address a question to Mr. Keenleyside. He may well be aware that there has been criticism from time to time about the engineers who have been working for the British Columbia Hydro and Power Authority concerning the estimates of final costs of the construction projects. For example, it has been suggested that with regard to the Strathcona dam in British Columbia the original estimate was \$19 million, the final cost was \$35 million. For the Whatshan repairs the original estimate was \$86,000 and the final cost was \$1,873,000. For the Spillimacheen plant the original estimate was \$1,970,000 and the final cost was \$2,930,000. For the La Dore generating plant the original estimate was \$11,987,000 and the final cost was \$19,229,000. For the Ash river generating plant the original estimate was \$11,010,000 and the final cost was \$15,050,000.

Some of the questions which would concern anyone in connection with the treaty were whether or not the estimates for the various projects will be accurate, whether they will be covered in the financial terms we discussed. I wonder if we could have some comment on this particular matter of the criticism of the estimating process, Dr. Keenleyside.

MR. KEENLEYSIDE: I was naturally concerned with the statement made in the house followed by the repeated statement that was made there and in this committee the other night that over the years the estimating of the senior officers of British Columbia Hydro had been on the average 50 per cent out on the low side.

Now, I shall not follow the example of the hon. member who made these charges and used words like "complete falsehood", and so on. I would prefer to believe that once again, and for the ninth time, Mr. Herridge has been misled by placing his faith on unreliable informers.

The statement repeatedly made that our engineers, those of the power commission, of B.C. Electric, and now British Columbia Hydro, have been 50 per cent out on the average in their estimating, is quite inaccurate, and the specific instances which Mr. Herridge quoted are equally inaccurate. He mentioned the five cases to which you have referred; in four of those five cases there has been a misstatement of the figures which his informant obviously transferred from the royal commission report to some other document which presumably he gave to Mr. Herridge. The figures in general are correct on Strathcona. The figures on Whatshan substitute \$86,000 for \$806,000. The figures on La Dore which were given by Mr. Herridge were \$11.9 million to \$19.2 million; the correct figures are \$8.7 million to \$9.2 million. In Spillimacheen \$2.9 million should have been \$2.3 million. On Ash river \$15 million should have been \$15.4 million. It is only fair to point out that in this case the mistake was in favour of the argument that was advanced by Mr. Herridge. The other figures were all mistakes from our point of view.

Having taken these, which presumably were the worst examples quoted in the submission to the royal commission, the informant from whom Mr. Herridge obtained his information failed to point out anything that would explain the apparent mistakes, and yet information on this was given in some detail in the submissions to the royal commission. For example, in two out of the five cases what we were talking about was not a detailed engineering estimate of what the program was going to cost, it was the result of a feasibility study comparing one possibility with another possibility in the area in which the construction was to take place, and it was never intended to be an exact figure for either case; it was merely to show that one possibility would probably be better than another by a certain per cent, or something of that kind.

In the case of the Strathcona, there is no reference in the statement that Mr. Herridge made to the fact that, as I say, it was a feasibility study to begin with and, secondly, that the project was changed half way through the construction program.

In the case of Whatshan, the estimate that was originally given did not make any provision—and consciously omitted any provision—for the clean-up and for certain alterations and improvements in the structure that were introduced at the time the change was made.

For the Ash River plant, again the first estimate was a feasibility estimate and was not an actual construction estimate.

In addition to taking these five worst cases and misstating them, the informant on whom Mr. Herridge relied did not mention that another job done at the same time, Puntledge, was done at below estimate. He did not mention that of all the projects completed between 1952 and 1958, the last years of the extensive construction program of the British Columbia Power

Commission, which totalled over \$53 million, the difference between the estimate and the ultimate cost was eight-tenths of one per cent. I submit, Mr. Chairman, that this shows a very good record.

If you take the explanation that I have given and that was given to the royal commission in relation to the five horrible cases that Mr. Herridge quoted; if you take into account the fact that they omitted better cases and if you take into account the fact that in the total picture over the last five or six years of the power commission activities the variation was less than one per cent, I think you will realize that the statement that our officers were 50 per cent out on the average becomes, shall we say, something upon which very little reliance can be placed.

I would like to go beyond that, Mr. Chairman, because this is a very important subject.

I have here a comparison of original and revised annual budget allowances and if I have your permission, I would like to put it into the record, and if necessary will read the whole of it.

The CHAIRMAN: Is it agreed that this be incorporated in the record without being read?

Agreed.

(NOTE: The table referred to by the witness follows.)

A COMPARISON OF ORIGINAL AND REVISED ANNUAL BUDGET ALLOWANCES
WITH ANNUAL PLANT EXPENDITURES

(\$'000)

| | | | | | | % Variance of Expenditures ¹ | |
|--|-------------------|-----------------|----------------|---------------------|--------|---|-------------------|
| | | | | | | To Original Budget | To Revised Budget |
| | | Original Budget | Revised Budget | Plant Expenditures | | | |
| <i>B. C. Electric Co. Ltd.</i> | | | | | | | |
| Calendar Year Ended 31 December | 1953 | 28,438 | 25,451 | 24,385 | -14.3% | - | 4.2% |
| " " " " | 1954 | 33,191 | 35,242 | 33,566 | + 1.1 | - | 4.8 |
| " " " " | 1955 | 40,427 | 43,403 | 42,176 | + 4.3 | - | 2.8 |
| " " " " | 1956 | 94,003 | 93,480 | 93,517 | - .5 | - | Nil |
| " " " " | 1957 | 101,905 | 114,520 | 109,250 | - 7.2 | - | 4.6 |
| " " " " | 1958 | 99,196 | 87,605 | 82,360 | -17.0 | - | 6.0 |
| " " " " | 1959 | 95,833 | 79,130 | 69,923 | -27.0 | - | 11.6 |
| " " " " | 1960 | 72,353 | 66,845 | 56,180 | -22.4 | - | 16.0 |
| " " " " | 1961 | 53,822 | 54,373 | 47,537 | -10.7 | - | 12.6 |
| <i>B. C. Power Commission</i> | | | | | | | |
| Fiscal Year Ended 31 March | 1961 | 14,928 | — | 11,696 | -21.7 | — | — |
| " " " " | 1962 | 16,598 | — | 12,206 | -26.5 | — | — |
| <i>B. C. Hydro and Power Authority²</i> | | | | | | | |
| Fiscal Year Ended 31 March | 1963 ³ | 55,045 | 56,997 | 49,795 | - 9.5 | - | 12.6 |
| " " " " | 1964 | 91,143 | 83,029 | 69,840 ⁴ | -23.4 | - | 15.9 |

* 6 favourable,
3 unfavourable.

¹ + = over-expended.

- = under-expended.

² Excludes Columbia River Development.

³ The first combined budget of the B. C. Hydro and Power Authority was reviewed and approved by the Executive Management Committee on 8 August 1962.

⁴ Includes estimate for March 1964.

HED/ALR:c1

14 April 1964

Mr. KEENLEYSIDE:

This is the story for British Columbia Electric from 1953 to 1961. I have already quoted what happened in the British Columbia Power Commission from 1953 to 1958 inclusive. I now submit in addition the statements showing the original budgeting figure and the ultimate expenditure figure for the commission in 1961 and 1962 and the figures for British Columbia Hydro and Power Authority for 1963 and 1964.

I may just summarize by pointing out that in the nine years I am quoting for British Columbia Electric, they underestimated their eventual expenditure in three of those years by 1.1 per cent, by 4.3 per cent and by 7.2 per cent. In the other six years their estimating was more than was ultimately spent. In the British Columbia Power Commission in 1961 and 1962 our original estimates were underexpended at the end of the construction period in both years. In the British Columbia Hydro and Power Authority, in the first two years our original budget estimates were over the ultimate expenditure in both years.

I submit, Mr. Chairman, that instead of being held up to scorn for being careless and incompetent, our engineers deserve a good deal of credit for the results that they have produced in the period we have been discussing.

Mr. MACDONALD: Mr. Chairman, I would like to ask a question of Dr. Keenleyside. One of the members of the committee—I think Mr. Leboe—indicated that it was his understanding that the estimates for the actual cost of the Portage Mountain dam were running well below the estimates. Would you care to comment?

Mr. KEENLEYSIDE: The situation so far is that for the major projects that have been started on the Peace river, namely the construction of the diversion tunnels, the construction of the coffer dam and the contract that has been let for the construction of the main dam, we have lower contract figures than the budget estimates that were put forward to begin with. We have no figures on the Columbia yet because we have been unable to start.

Mr. LEBOE: Was that in the neighbourhood of \$25 million to \$30 million?

Mr. KEENLEYSIDE: In the case of the main dam contract, we had estimated \$97 million and we obtained a contract for \$73 million. This is bad estimating, if you like, but I hope we have a great deal more of it! One of the reasons that the contract figure was so much below the estimate was that the construction company which received the contract introduced a conveyor belt system to bring materials to the dam site. Another contribution factor was the availability of those materials.

Mr. MACDONALD: I wonder if Dr. Keenleyside can tell us where most of the materials for the Columbia river dam will be obtained?

Mr. KEENLEYSIDE: Yes, I can do that, Mr. Chairman. As a matter of fact, the situation on the Columbia in regard to construction materials is very satisfactory.

In the case of Mica we will have to move about 37 million cubic yards of material and the greatest distance we will have to go for any of that is for the impervious fill and for some fill sands and gravel. In these cases it will be eight miles. However, the rock fill quarry material and the concrete aggregate can be obtained within two or three miles. Therefore we are in a very favourable position in relation to Mica.

We will not have to go more than a mile and a half for these materials for Duncan which is something rather unusual in this kind of construction.

In the case of Arrow, impervious fill for the dam and the blanket is available at a distance of three miles. Everything else can be found within two miles. We are in a very favourable position there, and we naturally hope that this will be reflected in the size of the contracts that we let.

Mr. WILLOUGHBY: May I ask a supplementary question?

What percentage of concrete would be involved in these three dams?

Mr. KEENLEYSIDE: I am sorry, I cannot answer that.

Mr. KENNEDY: I cannot quote the exact figure, but you will see from the architectural drawings that the main use of concrete is in the Arrow lakes, where there is a concrete structure.

Mr. WILLOUGHBY: The Arrow will be the only one of any consequence?

Mr. KENNEDY: Substantially, yes.

Mr. DAVIS: These, substantially, are earth and rock fill dams?

Mr. KENNEDY: Yes.

The CHAIRMAN: Mr. Davis, you have a series of questions?

Mr. DAVIS: I would like to follow the line of questioning in relation to costs.

My understanding, Dr. Keenleyside, is that all the materials are readily available to the dams themselves.

Mr. KEENLEYSIDE: May I interject for a moment and say something which has a bearing on this and also on what I said a minute ago about the low estimate for the Peace river dam? As you are aware—but other members of the committee may not be—one of the reasons for the much lower estimate in the case of the Portage Mountain dam was that the construction company which received the contract has introduced the system of a movable belt that carries the material from the borrow pit right down to the dam site. I think it is generally believed that this system—which this company has used elsewhere, a system which this company pioneered—will prove of great help there and we can hope that we may be able to use something similar in the case of Mica.

Mr. DAVIS: Another major element of cost in these projects will be the cost of labour. There was reference yesterday to the comprehensive agreement between the contractors, for example, and the union. Can this have a salutary effect so far as containing inflation, or in respect of inflation on costs?

Mr. KEENLEYSIDE: Provision is made in the agreement between the constructors and the allied hydro council for a periodic review of wage rates and fringe benefits but by itself this does not necessarily mean that we are going to be able to keep down increases in wages, nor would we try to do so if general wage levels in the province should rise. We were always—both in the British Columbia Electric as well as in the British Columbia Power Commission—trying to act as good employers. We have not tried to lead the way and to give higher wages, to pay higher salaries than other comparable organizations, but we have tried to avoid being at the bottom of the list. We have an agreement with the labour unions whereby the contractors and the unions through their single bargaining agents on each side will meet periodically to discuss wages and costs generally.

Mr. DAVIS: I would like to ask about taxes. Has provision been made in the estimates for payment of water rentals as is normal in the case of other projects in British Columbia?

Mr. KEENLEYSIDE: Yes sir, we have to pay taxes to the provincial government. We are already doing so in certain instances at the moment, and we are paying water licence fees also to the amount of \$1,250,000 a year. Incidentally, if anyone is interested, I have the whole story of the taxes here.

Mr. DAVIS: Provision is made in the estimates contained in the various papers, including the white paper, for the provincial 5 per cent sales tax?

Mr. KEENLEYSIDE: Yes sir.

Mr. DAVIS: And provision is also made for the federal sales tax?

Mr. KEENLEYSIDE: Yes sir.

Mr. DAVIS: In other words, all possible taxes have been included in these estimates regardless of whether you might renegotiate in the future or not.

Mr. KEENLEYSIDE: We have tried to persuade the federal government—as Mr. Williston said—to recognize the fact that our original planning in connection with these Columbia projects was done before the 11% tax was introduced, and that a lot of our estimates were made on that basis. Therefore we felt we had a claim for some relaxation, some special consideration in the matter of taxes. But so far we have not been able to convince Mr. Gordon of the desirability of making that change.

Mr. DAVIS: Is provision made in the estimates for clearing reservoirs?

Mr. KEENLEYSIDE: Yes sir, a very large provision.

Mr. DAVIS: Reference has been made in the submission to flowage cost. Has provision been made for expropriation of any areas for the purpose of flooding?

Mr. KEENLEYSIDE: There has been a very large item included in the estimates for the Arrow lakes, and smaller items, but not very much smaller items, in connection with the provision for Mica and the Duncan area.

Mr. CHATTERTON: Might we be given an idea of the amount set aside for clearing reservoirs, sir, just a rough idea?

Mr. KEENLEYSIDE: With respect, I hope that that question will not be pursued, because if we answer it now and say that "X" millions of dollars have been set aside to meet flowage cost, and if in a few years from now we spend more than that amount on flowage cost, then we will be criticized for it. But if we should spend less than that, the residents in the area concerned will be claiming that we have been screwing them down and treating them improperly. Therefore I would rather not give a definite figure for the amount of money put aside for this purpose.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): On this question of cost, has there been any projection made of the probable increase in general costs over the period of construction?

Mr. KEENLEYSIDE: I want to be sure that I answer this question correctly. Mr. Kennedy confirms my understanding that what we have done is to include inflationary provisions up to the period when the actual construction starts. We have not included any provision for inflation from that time on because we felt that no matter what project we undertook, the same inflationary principle or fact would apply to it. So that in comparison with any other job that we might undertake, we have not made provisions for inflation.

Mr. HERRIDGE: I have a supplementary question. Could Dr. Keenleyside tell the committee what amount of the total estimated cost of High Arrow is set aside for flowage cost?

Mr. KEENLEYSIDE: I have answered that question already, and unless I am directed by the committee to do so, I prefer not to do it again.

Mr. HERRIDGE: I thought Mr. Davis was asking for it in more detail.

The CHAIRMAN: You have a question, Mr. Chatterton?

Mr. HERRIDGE: Do I understand that you have made allowance for possible inflationary cost up to the time of construction of each project?

Mr. KEENLEYSIDE: Yes, that is correct.

Mr. DAVIS: I would like to ask about market studies. Has any investigation been made about markets for power in Alberta or in Saskatchewan? Have any talks taken place with respect to the possible sale of power from Mica Creek in Alberta?

Mr. KEENLEYSIDE: I would prefer not to go into any detail about this, but I can say that we have been talking with certain persons in Alberta since 1960 about the possibility of making sales there, because all of us have been imbued with the desire to make contacts with the rest of Canada; in other words, to have interconnection just as quickly as possible.

We would much rather sell our surplus power to other Canadian provinces than to the United States, if a Canadian market existed. I would say that at the time we were thinking about entering into discussion with certain utilities in Alberta, the initiative was taken by them; they opened the question first. But we have off and on from that time been discussing possibilities with Alberta.

Now with regard to sales in the United States, again I do not want to go into detail, if I may be excused, because the whole thing has such publicity value that if I should say that we were talking about some specific possibility in the United States, it would be in the headlines of every newspaper on the west coast tomorrow. I would prefer not to do that, and I am sure the people we are talking to would prefer not to have it done.

Mr. Kennedy suggested that it might be well to draw attention to paragraph 16, subparagraph (2), of the first Canadian-British Columbia agreement which is on page 105 of the white paper with the green cover. There it says:

16. (2) Subject to the requirements of British Columbia, British Columbia will make available to other provinces of Canada, through a national grid or otherwise, on a first call basis, electric power from the Columbia river and other power developments in the province of British Columbia at prices not higher than those obtainable by British Columbia from time to time from the United States of America for any comparable British Columbia entity electric power exported thereto.

In other words, we would like to sell it in Canada, and we would give first call to Canadian purchasers at a price not higher than we could get elsewhere.

Mr. DAVIS: In the treaty there is reference made to the possibility for long term development and a co-ordination agreement between Canada and the United States. Does this conceivably add to the power potential of the upper Columbia in Canada? Are there opportunities through co-ordination as a result of co-operative development of such resources in Canada, and for this co-operation extending to the Pacific northwest power pool?

Mr. KEENLEYSIDE: Yes, Mr. Chairman. This is, in fact, one of the most attractive features of the agreement into which we have entered. There is provision for co-ordination there. The two entities already are talking years in advance of what may be done. As Dr. Davis knows as well as anyone, the beneficial results of the co-ordination between two or more utilities are of a very substantial order.

Mr. DAVIS: These have not been assessed or spelled out for purposes of these benefits.

Mr. KEENLEYSIDE: No; these have not been taken into account in the economic evaluation which we now are presenting to parliament. The benefits are, however, matters of real importance which are in the background and which are going to be of tremendous benefit to us in the years to come.

Mr. RYAN: Is there a swapping of the power loads across the border?

Mr. KEENLEYSIDE: Mr. Kennedy has been involved in this for a number of years and I would ask him to answer the question.

Mr. W. D. KENNEDY (*Manager, Economic and Commercial Services Division, British Columbia Hydro and Power Authority*): When two utilities are operating independently, they both have to provide enough spare generators and spare transmission lines to meet their individual loads. When you put those two utilities together in a co-ordinated system, you can therefore reduce the number of spare generators you require, and the number of spare transmission lines. In other words, if one utility breaks down, then the other utility can come in and help it out. In return, the first utility can return later the power which is conveyed to it. There are very great gains to be made by this process.

Mr. PUGH: In effect, this would be an export of power?

Mr. KENNEDY: Not necessarily a permanent export. In the example I quoted we would say this utility broke down and we will supply power to it for three days and this power would be returned. There are many such equity agreements in existence.

Mr. PUGH: Does this look ahead to a sort of continuous flow between the two countries? I do not mean in the case of emergency, but continuous flow?

Mr. KENNEDY: Under a co-ordinated arrangement, it could be developed, that this would be done; for example, for one year, the utility would deliver power and it would be returned the following year. By such an arrangement you can make savings in your capital expenditure.

Mr. PUGH: On the graph which we have I notice the power curve goes up as does the phasing in of our power. When do you expect that all of that power from the Peace and Columbia will be in use?

Mr. KEENLEYSIDE: Mr. Chairman, it is not really profitable to project for more than about 10 years on these things. Because load growths change so rapidly it becomes very questionable how accurate you are if you get beyond about 10 years. Our feeling, however, is now that we well may use up Peace power by 1973, 1974 or 1975. We will have used the Mica generation by, say, 1975, 1979 or 1980. We would expect to use the rest of the Columbia between 1979 or 1980 and about 1984 or 1985, and from then on we would have to find additional power in other sources.

Mr. PUGH: Not on that river at all; the Columbia would be used?

Mr. KEENLEYSIDE: That would take up pretty nearly all of the Columbia. There would be marginal power to be developed in some places on the Columbia, even at Duncan and Arrow. You could get 30 megawatts out of Duncan and 60 megawatts perhaps, out of Arrow; but whether or not this would be economic is something we cannot tell at this stage.

Mr. PUGH: Lined up in British Columbia there would be better areas to be developed?

Mr. KEENLEYSIDE: On a large scale, yes. For significant amounts there would be many other rivers. So far as we can tell now the Liard, for example, would be a real source of power at a comparatively low cost.

Mr. PUGH: Returning to that pool—

The CHAIRMAN: Are you entering a new area? This certainly is not a supplementary question in my judgment, but you may continue if you will not be too long.

Mr. PUGH: Once again I am thinking of export. In this pooling what sort of load do you have to carry?

Mr. KENNEDY: This must be defined in relation to the size of the utility. A common figure that is in mind is that you must carry enough generating capacity to equal in size the largest generator you have in your system. If that goes out, you have to be able to meet your load. When the utility gets to a much bigger size a figure in the order of 10 per cent is fairly high, but it may be 7 per cent or 8 per cent.

Mr. KEENLEYSIDE: Might I give a little illustration of the sort of thing which might well happen, because it is happening now. There is just such a close interconnection between the Ontario hydro in the Niagara Falls region and the utilities on the United States side where power is flowing back and forth across the border all the time one way or the other. For example, I understand that if in the middle of the afternoon a heavy cloud comes up over Buffalo, without anybody moving a finger on the Canadian side, power starts to flow from Canada into Buffalo, and when the cloud passes by, it flows back again.

Mr. DAVIS: In respect of flood control, many figures have been bandied about in respect of the value to the United States of the flood control. The flood control payment to Canada under the treaty was developed back in 1961. My understanding was that in United States funds it was in the order of \$128 million, and also that that figure was established on a basis similar to that used in interstate arrangements in the United States and inter-utility arrangements. The \$64 million payable to Canada, namely one half the \$128 million, is as a result of application of the principles which were advocated by the International Joint Commission in 1959, namely that one half of this \$128 million would be payable to Canada. Would you confirm that the criteria used are similar to those used within the United States, and that this one half of \$128 million is consistent with the International Joint Commission principles endorsed by General McNaughton and others.

Mr. KEENLEYSIDE: I am not in a position to guarantee of my own knowledge that this is consistent with what normally is done in the United States, but I have been told by the United States authorities and others who have studied it that this is the case. I do not know whether or not the members of the committee would like me to go into that absurd figure of \$710 million which has been used to indicate the value of the flood control we are giving to the United States, and as the cost that would be involved if the United States were to do it on its own. This is spelled out in the white paper, starting on page 143 and going on from there.

Mr. PUGH: I, for one, would like the doctor's explanation.

Mr. KEENLEYSIDE: This statement concerning the \$710 million was based on a statement made by Mr. Udall, the United States secretary of the interior, back in March of 1961. At that time he said that to provide flood control and power benefits equivalent to those provided by the Canadian storage as of 1970, entirely from projects in the United States, would require an expenditure by the United States over the next nine years of about \$710 million, including the cost of necessary additional transmission facilities. This quotation has been used very frequently since in a twisted and peculiar manner.

Mr. DAVIS: Does that not include provision for power benefits?

Mr. KEENLEYSIDE: Yes; it says: to provide flood control and power benefits in the United States.

The alternatives to the Canadian storage, Mr. Udall, is saying, would involve seven United States projects in order to provide benefits from power, navigation, fish and wildlife, recreation, as well as flood control. In respect of flood control \$710 million represents only 14 per cent; in other words, something of the order of perhaps \$100 million.

Now, in the last three years the Bruces Eddy dam has been under construction, and the amount that was credited to that naturally would have to be withdrawn because the United States is going ahead with it anyway and it would not be something that would have to be done separately in order to take care of this need.

Because the Canadian treaty storage which, as you know, was given a first added credit before Bruce Eddy that project's Columbia river flood control benefit is reduced to \$155,000. As I said, the alternative cost figure for the United States which has been quoted is not only a matter of flood control construction, but it involves the other points about which I have spoken.

Mr. Kennedy tells me this is referred to in the blue book at pages 91 and 92.

When you take into account all the other construction aspects that were included in that \$710 million you find that the amount that can properly be referred to flood control, omitting the electrical and other benefits I have mentioned, is less than \$100 million and that, of course, is the immediate value.

Mr. DAVIS: The value to the United States then was assessed at \$128 million in 1961 or 1960, in the discussions preparatory to the treaty signed in 1961. That flood control is only the flood control attributable to High Arrow, Duncan and, to a much lesser extent, Mica creek, during the life of the treaty; you have other payments which may accrue to Canada as a result of flood control after that period, namely in respect of exceptional conditions and, of course, additional storages in Canada.

Mr. KEENLEYSIDE: Yes. What happens after the treaty is this: as long as these dams are in operating condition—that is, in existence and can be operated—we are obligated to meet calls from the United States for additional flood control if they can prove to us that they are threatened by a flood at the Dalles, which is the place they estimate these things, of over 600,000 cubic feet per second, if they can show there is no conceivable way by which they can meet this emergency by using all of their own storages—that is, the whole system storages—and if they can show us there is no other means by which they can take care of the problem themselves.

In these circumstances they can come to us and say: you have these dams; please use them for our benefit to stop this flood which is going to seriously affect us. Having received a request of that sort we have to meet it; but, the treaty and protocol provide that if we do meet their request we are then paid not only the cost of operating the storages in order to hold the water back and to help the United States in that way, but we also are reimbursed for any economic loss of any kind which results from this action. In other words, if we have to stop generating for some reason or other, or if it interferes with some other plans we have made for irrigation, domestic consumption and so on, no matter what it is, if it results in any economic loss to us the United States pays for it.

Mr. DAVIS: The \$64 million is far short of being a once and for all payment for all flood control in the upper Columbia.

Mr. KEENLEYSIDE: Yes. Not only is there provision for the kind of payment at the end of the treaty that I have described the United States undertake to pay us up to \$8 million for the first four calls they make on us after the first 60 years.

Mr. DAVIS: This clause, "compensation for any economic loss" applies to the period beyond the 60 years.

Mr. KEENLEYSIDE: Yes.

Mr. DAVIS: That is in respect of these three treaty projects.

Mr. KEENLEYSIDE: Yes.

Mr. DAVIS: Could this conceivably include the loss accruing to Canada if we wanted to use the valley of the Arrow lakes for agricultural production?

Mr. KEENLEYSIDE: If we were using the water for that purpose and if it was interfered with by a call of this kind, certainly.

Mr. DAVIS: In other words, every economic possibility in Canada will be taken into account in these future years in evaluating what are the costs to Canada for carrying out this service.

Mr. KEENLEYSIDE: The term is both general and specific; they will meet any costs that we can show to have resulted from the action we have taken on their behalf.

Mr. DAVIS: In other words, they will pay the alternative costs and they will pay for the alternative opportunities which we forego in carrying out the storage function?

Mr. KEENLEYSIDE: Certainly.

Incidentally, I think I misstated myself a moment ago; that figure of \$8 million is before the 60 years and after the 60 years the general reimbursement clause comes into effect.

Mr. DAVIS: I have one final question in respect of flood control. My understanding is that the great bulk of the flood control function is carried out by the High Arrow and Duncan lake facilities and perhaps only one per cent of the flood control paid for under the \$64 million provision is carried out by Mica creek; in other words, the Mica creek reservoir is substantially free of having to carry out any flood control provision whatsoever.

Mr. KEENLEYSIDE: There is only 80,000 acre feet for Mica and all the remainder is in Arrow and Duncan.

Mr. DAVIS: Eighty thousand as against a figure of what?

Mr. KEENLEYSIDE: Against a figure of 15.5 million acre feet.

Mr. DAVIS: That is, millions of acre feet.

Mr. KEENLEYSIDE: Yes.

Mr. DAVIS: In other words, Mica creek can be operated virtually all the time independent of this flood control requirement from the United States?

Mr. KEENLEYSIDE: Flood control requirement, as far as Mica creek is concerned, is under the present arrangement—

Mr. DAVIS: Minimum.

Mr. KEENLEYSIDE: —relatively insignificant.

Mr. DAVIS: So we are free to use Mica creek as an on site power producer.

Mr. KEENLEYSIDE: Of course, because of High Arrow; because we hold the water at Arrow we do not have to hold it for flood control purposes at Mica.

Mr. DAVIS: Thank you very much.

Mr. RYAN: Dr. Keenleyside, when you speak of impervious fill do you necessarily mean igneous or metamorphic rock at these sites?

Mr. KEENLEYSIDE: I am afraid you have got me there because my college geology is so far behind me. Mr. Kennedy points out that our consultants will be here and will be able to answer that question.

Mr. RYAN: With respect to the conveyor belt system, will the eight mile haul at Mica be more economical than either trucking or taking the rock off by rail?

Mr. KEENLEYSIDE: I do not know the answer to that question. It will be up to the contractors concerned to decide whether they want to use this system or some other system. On the basis of what they tell us about their experience at the Portage mountain dam, that may well be the case.

Mr. RYAN: Dr. Keenleyside, what are your authority's requirements in respect of bid bonds and performance bonds?

Mr. KEENLEYSIDE: I believe the figure is 25 per cent, although I am afraid I cannot tell you that with any assurance. We do get a very significant guarantee from them in the form of a performance bond. My impression is that it is 25 per cent, but I should not like that figure to be taken as certain.

Mr. RYAN: That figure is lower than the normal, is it?

Mr. KEENLEYSIDE: I am not sure.

Mr. RYAN: Is it your policy to have one prime contractor in respect of each dam, or would you have more than one prime contractor on different phases?

Mr. KEENLEYSIDE: I think the likelihood is, although this will be a matter of decision by consultants as well as ourselves, that there will be one prime contractor for the dam itself but that there will be subcontractors—perhaps subcontractors is not the correct term—there will be other contractors for some of the other jobs such as the construction of the diversion tunnels and possibly even the construction of the coffer dams.

Mr. RYAN: I take it that in some cases these other contractors will make direct contracts with your authority?

Mr. KEENLEYSIDE: In some cases that will be so, yes.

Mr. RYAN: Looking at the illustrations of the dams which appear on our left and to your right, Dr. Keenleyside, and particularly the two dams at Duncan and Mica, I notice it appears they have roads across the tops, yet according to the charts over here at which we looked last night in respect of Mica and Duncan there seems to be a service road leading up to those two dams. Are these roads across the tops of these dams planned to carry future highway traffic?

Mr. KEENLEYSIDE: There will be roads across the tops of all three dams. They will be open for highway traffic in the case of High Arrow, but whether there will be anything on the other side in the way of a highway at Mica is not yet clear. I think there will not be a highway leading anywhere on the other side so there would be no point in having it used as a normal highway passage.

In respect of Duncan, the road will lead across to the other side for highway purposes although the highway up the other side of the lake at Duncan will be primarily a logging road. Of course, some logging roads, including this one, are pretty good means for travel.

Mr. RYAN: Thank you.

Mr. HERRIDGE: Mr. Chairman, with reference to Dr. Keenleyside's criticism of the figures I placed on the record in respect of construction costs at Nakusp regarding the British Columbia Hydro Commission, it is obvious that the figure \$86,000 appearing in *Hansard* is an error. The figure should be \$860,000. As far as the other figures are concerned, I should state that I obtained them from a very responsible engineer in British Columbia and will let him speak for himself when he appears before the committee.

Dr. Keenleyside, with respect to the flowage costs at High Arrow, I presume you have detailed estimates of the costs of relocating communities; compensation for property of owners; road relocation regarding the Celgar Corporation facilities; the purchase of the railroad and all other things connected with flowage costs but you do not wish at this time to reveal those detailed estimates to the committee?

Mr. KEENLEYSIDE: We do have some estimates in this regard. I do not know just how you define the word "detailed". We do have estimates which we feel are an adequate guide to what we have to spend in this way, yes.

Mr. HERRIDGE: I do not expect you to have close detail in this regard, but I understand you do not wish to reveal these estimates to the committee at this time?

Mr. KEENLEYSIDE: No, I think it would be unfortunate to put that information on the record at this time.

Mr. CHATTERTON: Mr. Chairman, I should like to ask a supplementary question. Has the comptroller already indicated to the authority the extent of clearing that he will require as called for in the licence?

Mr. KEENLEYSIDE: No. Mr. Williston, I think, went into some detail in this regard and described pretty thoroughly what he had in mind, because the comptroller will act very largely on the advice of the department of forestry of which Mr. Williston is the minister. He has not yet conveyed to us our instructions regarding what is to be done about clearing. We have a pretty good idea but we have not actually received the instructions.

The CHAIRMAN: Mr. Herridge, before you leave the point to which you referred, and I certainly do not wish to embarrass you, I should like to say that you have made reference to the fact that the source of your authority was an engineer who will be appearing before this committee.

Mr. HERRIDGE: Yes.

The CHAIRMAN: Do you think in fairness to yourself and to that individual as well as to the members of this committee it would be useful to indicate that source?

Mr. HERRIDGE: I do not think that is necessary, Mr. Chairman. That individual will appear before this committee.

The CHAIRMAN: Perhaps it is not necessary for you to do so, but I thought I should point out that situation.

Mr. MACDONALD: How are we going to question this individual intelligently without knowing to whom you are referring?

The CHAIRMAN: From this point on every engineer may be regarded by each member of this committee as the possible source of your information.

Mr. HERRIDGE: The gentlemen to whom I have referred is in fact Mr. Bartholemew. I notice that Dr. Keenleyside smiled when I mentioned his name.

Dr. Keenleyside, does the first purchase at Duncan lakeside establish the pattern of compensation to owners in respect of this development?

Mr. KEENLEYSIDE: Mr. Chairman, to the extent that the first purchase represents a fair deal to the person concerned, to that extent it sets a pattern. I do not know that I can say anything more about it than that. We paid the individual who owned the land very close to what was asked.

Mr. BYRNE: Mr. Chairman, may I ask a question in respect of compensation and cost of clearing?

The CHAIRMAN: Do you wish to ask a supplementary question?

Mr. BYRNE: Yes.

Mr. HERRIDGE: Mr. Chairman, I have two more questions.

The CHAIRMAN: I am sorry.

Mr. HERRIDGE: Had Dr. Keenleyside concluded his last answer?

Mr. KEENLEYSIDE: Yes, I have concluded my answer on that point certainly.

Mr. HERRIDGE: We have a small bus service between Revelstoke and Arrowhead. There will be a road relocation and the man who operates this business may well be put out of business for a year or so. Will he be compensated for that loss of business?

Mr. KEENLEYSIDE: I would not want to give a final answer in that regard but my inclination would be to say that he would not be compensated in that way. This is one of the normal experiences of a person in that kind of business. There will be another road there which will be in fact a far better road than the one which now exists. This individual could easily I think transfer his operations to the other road and carry on in a better fashion.

Mr. HERRIDGE: I understand from this individual that there is a general understanding there will be a period of dislocation during which he will not be able to operate his business. He has a franchise.

Mr. KEENLEYSIDE: I do not think we can answer that question because we do not know just when one road is going to be out of use and when the other road is going to be put into use. The situation may well develop where the two roads are in use at the same time.

Mr. HERRIDGE: Yes, but if this gentleman is put out of business for a period of time will he be compensated for his losses occasioned by the development?

Mr. KEENLEYSIDE: I am not prepared to answer a hypothetical question of that sort, Mr. Chairman. We would have to look at all the circumstances.

Mr. HERRIDGE: We have a cold storage plant in Nakusp. The owner has operated this business for many years. He had depended entirely on local beef raised along the Arrow lakes which he can obtain to much greater advantage than by shipping beef in. In such a case would that individual be compensated for the loss of business occasioned by the flooding of the farms from which he has obtained his supplies to a greater advantage than shipping in cattle from some distance?

Mr. KEENLEYSIDE: Here again, Mr. Chairman, we have to look at all these circumstances surrounding it. My offhand feeling about it would be that we would probably be inclined to help the gentleman in question to get established somewhere else.

Mr. HERRIDGE: I have one more question. The local postmasters in small stores would be completely flooded out. Will they be compensated for the loss of business? I expect it would be pretty unlikely that they would get post offices back. Would you agree to provide them with a post office? Will they be compensated for the loss of business which has not been large but steady throughout the years?

Mr. KEENLEYSIDE: If a person has a store in an area that is going to be flooded out, I think it would be reasonable to assume that we would help him to get established somewhere else. Whether he would get a post office franchise or not would be taken into consideration, I presume, in establishing the value of what it is that we are taking away from him.

Mr. HERRIDGE: He would receive some consideration for having lost this small regular business, I take it?

Mr. KEENLEYSIDE: This is the sort of thing you cannot answer in detail.

The CHAIRMAN: Mr. Herridge, I am sure we all recognize the importance of this; certainly anyone who has lived in the St. Lawrence seaway region in the last few years does.

Mr. HERRIDGE: They were treated very fairly.

The CHAIRMAN: But I am putting to the committee the question I raised yesterday concerning relevancy, having in mind that we are a federal parliament sitting as a committee thereof and inquiring essentially into the national aspects of this matter. I appreciate of course that we cannot confine our enquiry into something so narrow that it will fail to look at these other problems,

but I am asking you, Mr. Herridge, to consider whether there are not really matters between the aggrieved persons with very legitimate claims and their respective jurisdiction, namely the province of British Columbia.

Mr. HERRIDGE: If I transgressed, I apologize, but as a member representing these people I have raised these questions at their request.

Mr. DEACHMAN: Mr. Chairman, I want to direct some questions to Dr. Keenleyside regarding the economic impact of the construction of these dams over the course of the next decade. The questions I have to ask are almost identical with the ones I put to Mr. Williston and to Mr. Bonner, but I particularly want to have Dr. Keenleyside's view.

I wonder if we might start with giving consideration to the employment that this will bring directly to the area and to the multiple effects of this employment on the economy. I am particularly interested to know what your views are in regard to the spreading of this work to alleviate winter distress in unemployment.

Mr. KEENLEYSIDE: Mr. Chairman, I will speak to the last point first. While we would of course be very anxious to do anything that we can to ensure that unemployment is reduced in the months in which it is normally highest in British Columbia, we would have to take into account, in making any decision which would result in delaying the progress of the construction, first of all whether it would delay it dangerously in relation to the completion date, and secondly whether the delay would mean an appreciable increase in costs. If we could be satisfied that on neither of those points were we going to be put in a worse position, then we would certainly try to assist in cutting down the increase in unemployment that normally takes place in British Columbia in the winter months.

May I say that all of us at the hydro are very conscious of this problem of employment. I think most of us feel that it is the one great problem that we in Canada are facing in our civilization and that similar countries are facing at the present time. We are going ahead increasing production, our annual growth per capita is very high, and yet it has had practically no effect over the last few years in reducing unemployment. If we can contribute to overcoming that shortcoming in our civilization as we have developed it in Canada, we will certainly do so.

Mr. DEACHMAN: I would like to have these questions dealt with in sequence. I was particularly interested in the remarks you made about Revelstoke and about the possibility of Revelstoke developing as a very important resort area as a result of this construction. This is the very area where secondary employment arises out of these construction projects. Can you expand on any studies or any thought that has been given, particularly with reference to your experience in the Peace river area, concerning the effects of this on the community as the projects go forward?

Mr. KEENLEYSIDE: Of course the experience in the Peace river is not too relevant to conditions in the Revelstoke or Castlegar area because the correct population in the Peace river is very small. If you take the area from Prince George north to the site of the Portage Mountain dam, we have figures to show that 60 per cent of all the people who have been employed on the Peace project have been residents of that area.

Now, we would hope that in the case of the Mica-Arrow-Duncan complex the percentage of local employment would be even higher than that, and perhaps considerably higher since, as there are more people there, there is a greater variety of skills among the people available, and we will certainly give preference to the people in that area. We hope it will run to perhaps 75 per cent of all those who are employed.

Mr. DEACHMAN: Is it your experience that the skills you will need in this project are going to be readily available to some considerable extent in the south eastern sector of British Columbia, in the Kootenay and Okanagan regions, for instance and the Revelstoke and Kamloops area?

Mr. KEENLEYSIDE: We would hope that most of the skills that are required in these projects can be found there. Of course, this does not mean that we would expect to find top level management or technicians there because many of them will come from our own organization, others will come from the top level of management in the firms that are actually working on the construction, and so forth. However, of the people in the trades and related fields who will be employed on these projects, we would certainly hope that most of them can be found there, and this is a reasonable hope because you have quite a variety of skills well established in the areas now.

Mr. LEOBE: I wonder whether I could be of help on this question. I have received a communication recently in which I was informed that of a possible 1,400 men employed in the Peace river area 18 men will be imported. These are highly technical men.

Mr. DEACHMAN: I should like to ask a question about small contractors with earth moving machinery of which there are a considerable number in the province. In a project of this kind, where such enormous amounts of earth and material must be moved, what effects will that have on them, or will major outside contractors with new equipment move in and will these be bypassed?

Mr. KEENLEYSIDE: I do not think I can answer that specifically, Mr. Chairman, but I do believe that the amount of work that has to be done in this field in British Columbia over the next 10 to 15 years will be so great that everyone engaged in this kind of business is likely to be fully employed.

The reason for that is that even if on the biggest projects there are major contractors who bring in enormous earth-moving equipment from outside, those contractors are likely to be so busy on the big jobs that they are not going to be interfering with the run of the mill jobs which will be open, in consequence, more widely than they are now to the small man in the field.

I would be very surprised if, over this period of 10 or 15 years, it is found that anyone who is at all competent in this field and who wants to stay in it, and is prepared to work at it, would be out of a job.

Mr. DEACHMAN: I have one more question to ask in connection with this matter.

Can you tell me how many heads of families or principal earners of families will be directly employed on the average, per year, in the course of this construction?

Mr. KEENLEYSIDE: Perhaps I can answer that, Mr. Chairman, by giving some information about what we expect the sort of community set-up to be in at least one of these areas; and the others would be somewhat similar.

Take Mica, for example; the project will require a self-sufficient community at the dam site which will include a hospital, a school or schools, retail stores and recreational facilities. The community will need to be a relatively permanent type because the continuous construction period will cover at least nine years; and it could well last longer than that because the generation may go in, and the generation will employ quite a few people. It is expected that about 1,700 men will be engaged on the work at the dam. About 300 men at the peak period will be engaged on clearing the reservoir and on relocation work, and they may be housed somewhere else—not in this community but somewhere on the perimeter.

In addition to contractors' offices, warehouses, workshops, outside storage and vehicle areas, there will be about six—this is the forecast—permanent

bunkhouse buildings, about six trailer complex bunkhouse units, guest and staff houses, a mess hall capable of expansion for catering up to 1,400 men, a trailer parking area to accommodate 300 to 600 trailers, 30 operators' houses for senior officials, field office buildings for consultant and hydro staff, and security and fire prevention facilities, a hospital, a school, a gymnasium, an auditorium, a playing field, retail shops, a service station, a barber shop, a bank, recreational facilities, a restaurant, a drug store, a dentist's office, and the necessary power, water supply, sanitation and maintenance services.

It is also expected that the community will provide and operate on land owned by the authority other facilities including churches, tennis courts, a skating rink, a swimming pool and so on. The total area of the community will be of the order of 100 acres.

With reference to your specific question, there would seem to be about 1,700 men on the site itself, and at a guess there would be something like 600 of those who would have families with them.

Mr. DEACHMAN: Have you chosen a name for this site yet?

Mr. KEENLEYSIDE: Not yet.

Mr. HERRIDGE: Just a supplementary question on this point, Mr. Chairman.

During the building of the pipe line in southeastern British Columbia, large numbers of United States citizens crossed the border as landed immigrants, obtained employment as Canadian residents, and then returned to the United States. What is the commission going to do about a situation like that? Will they be able to determine that these people have simply come over to get work as landed immigrants and are very likely to return to the United States? What will they do to protect the Canadian residents?

Mr. KEENLEYSIDE: The general policy, Mr. Chairman, is that we give preference to the people in the community, and we decide on whether a person belongs to the community or not by insisting on proof that the individual has been there for a minimum of 60 days. We do not feel it would be possible to do much to make that a longer period. If persons have been there for 60 days as residents and if they indicate that they will stay as permanent residents, then they come in under this preference.

It might perhaps be of interest to the committee if I were to indicate the sort of "picking" system we have and the orders of priority we are using in this matter. Let me say again what I said yesterday: we are very concerned and conscious of problems in relation to this whole labour situation and we are determined that if it is possible to do so we will have the Columbia construction carried on as a model for relationships between employers and workers. If we fail in that we will be seriously disappointed.

Our system in relation to employment is this: we work through the national employment service and we insist that the Columbia constructors work through that service. We are not doing something outside the system that has been set up by the national government. We give first preference, however, to union members who are resident in the area. This depends on whether or not a list of bona fide union members in the area is available, and to some extent upon the internal rules of the individual union. However, in principle the union member resident in the area is given preference.

In the unskilled trades—and that is chiefly labourers—we have consistently hired in the local area, taking union members first and non-union local residents second. With very few exceptions, all the unskilled personnel have been hired locally. I think this is in accordance with what Mr. Leboe said a minute ago was the experience on the Peace.

In the semiskilled category and some of the skilled categories we have secured many of the employees from union membership in the local area. In some special cases we have hired non-union local residents in these categories, but in the main we have filled our requirements from union members coming from all parts of British Columbia.

Finally, in many of the skilled trades we have been able to secure all our requirements through unionized local residents. This is mostly, of course, related to the Peace because we are not yet doing this in the Columbia. This is the story in the Peace, but we are transferring the same principles to the Columbia. For example, electricians fall into this category, but in some trades we have had to bring in personnel from other areas because of the simple fact that certain trades are non-existent in the north country. People such as iron-workers, for example, just are not found there.

That is the sort of order of priority in which we propose to take on personnel, and as you know we are committed in our agreement between Canada and British Columbia to give preference to Canadian citizens and Canadian residents in all of these matters.

Mr. DEACHMAN: I want to thank the witness, Mr. Chairman, for answering the question so fully.

I wonder if Dr. Keenleyside might take back with him the thought of calling that dam the McNaughton, because General McNaughton certainly had the most to do with the pioneering of these projects.

Mr. KEENLEYSIDE: I certainly would not object to that, Mr. Chairman.

The CHAIRMAN: Mr. Cameron?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Dr. Keenleyside I would like to revert for a moment to the question I raised with you just now in regard to the projection of future costs. I do not know whether you are in a position to give me any idea what that projection entailed, or whether it would be proper for you to do so.

I discovered earlier in these hearings that the government of Canada is picking up the tab for any disparity in interest rates involved in the financial arrangements to be made with the United States.

Mr. KEENLEYSIDE: Let me interject: I am sure that the hon. member is mistaken.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): No, I am not mistaken. I have the evidence from the Secretary of State for External Affairs, and it is fairly authentic. The reason I want to ask you this question is that I have found the curves of increase in building materials have been going up very rapidly. I checked them since the previous figures and find that the increase between 1961 and 1962 is 8 per cent in points, and the increase in 1962-1963 is 1.7 per cent in points, and from 1963 to 1964 it is 3.8 per cent in points. You see from that that the rate of increase is accelerating very rapidly, and more than doubling in each of those three years. While no one can foresee exactly where this curve will go, I myself cannot see many economic signs which are likely to alter it within the lifetime of these projects, and it might very well amount to large sums which would far exceed the return that British Columbia is getting for this power. I wondered if you could give me any assurance that the province will be in a position to meet costs if they continue to rise in this matter?

Mr. KEENLEYSIDE: Mr. Cameron I take it is talking about building materials and not dam construction materials.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): No, I am talking about non-residential building materials, and I think they are a fairly good indicator of the general cost pattern.

Mr. KEENLEYSIDE: No, they are a very poor indicator.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Very well, you give me the right one, then.

Mr. KEENLEYSIDE: Because a very small proportion of our costs will depend on imported building materials. I think the significant point here is that no matter what projects are undertaken in connection with the development of the Columbia, these factors will to some extent appertain, and it is no argument either for or against the projects we are talking about in this committee to say that there will be an increase in cost.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I was not arguing that. I was simply expressing some concern over the position of the government of Canada, because I had already discovered that they were going to pick up part of the tab, and I wanted to be sure that they were not going to do it with this.

Mr. KEENLEYSIDE: You said at the beginning that the government of Canada is paying the difference between the two sets of interest rates which, with great respect, is just not the case.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I suggest you take it up then with the Hon. Mr. Martin.

Mr. KEENLEYSIDE: I would be glad to, certainly.

Mr. LEBOE: Mr. Chairman, we had a full discussion of this point previously when Mr. Martin was before the committee and when it was very well established that this was the responsibility of the Canadian government, because it was a matter between the United States and Canada, and that it had nothing to do with British Columbia at all because this is a service which is given to Canada. There is nothing to do with British Columbia in connection with payments in this business as far as bonds are concerned, whether the interest rate be $4\frac{1}{2}$ per cent or 5 per cent.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You have expressed my point very well. That was my point exactly. I thank you.

Mr. KEENLEYSIDE: The situation is quite clear, but Mr. Cameron is not correct in this at all. In the agreement between British Columbia and Canada it is clearly stated that British Columbia will hold Canada harmless in relation to this whole provision.

Mr. LEBOE: That is correct.

Mr. KEENLEYSIDE: Anything that Canada gets stuck for—if you may put it that way—will not be a charge against British Columbia. Canada is taking this money from the United States. The interest rate has nothing to do with it. The interest rate is a domestic problem in the United States. Canada is to get a certain number of dollars from the United States. These dollars are being translated into Canadian funds and then are being transferred to British Columbia. There is no great problem there.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You are not correct in this. Those funds are not being received in United States funds, because the United States cannot afford to export \$254 million in United States funds. Therefore the United States government has made an arrangement whereby we will accept United States paper, bonds, and the Canadian government has agreed to accept any disparity between the interest rate payable on such bonds and the interest rate required to borrow the money to pay to British Columbia.

The CHAIRMAN: I am sure that we must not permit—

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I think you should know what Mr. Martin said when he was in the committee here.

Mr. KEENLEYSIDE: I was just trying to keep up with Mr. Cameron.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You may find it difficult, sir.

Mr. KEENLEYSIDE: I am sure I shall.

The CHAIRMAN: I hope we will remember that we are asking questions.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am sorry, but when I am given information which I know to be incorrect, I am not going to let it stand on the record, because it confuses the record.

Mr. KEENLEYSIDE: If you wish me to argue the point, I should be glad to do so.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): All I want is some assurance that the same situation may not arise with increasing construction costs posing a similar problem for the government of Canada.

The CHAIRMAN: I do not think it is fair to a witness or to parliament who will be reading these records, to have statements made by members when the witness is compelled to remain silent. After all, we are grateful for these witnesses who have come at our request, and I am sure we would hope that they be afforded full opportunity to answer questions put. Was there a question which you had in mind?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I had asked a question, and this whole thing arose because Dr. Keenleyside took it upon himself to make a statement and to deny the statement I had made which was based upon evidence given before this committee. I suggest that Dr. Keenleyside should confine himself to answering questions and not making statements.

Mr. KEENLEYSIDE: It would be difficult to answer a question without making a statement.

Mr. DAVIS: Reference has been made to rising costs. It is my understanding that there is a publication entitled "Engineering News Record", which provides an index of construction costs for earth and rock-filled dams, and that this index has been falling for several decades. I wonder if the witness could tell us at a later date what has happened to that index of construction costs?

Mr. KEENLEYSIDE: I think we could find that without a great deal of trouble. The most significant factor is in regard to the costs of the last two years on the Peace river where we made our estimates and it would seem to be a reasonable assumption in regard to the costs that would be incurred over a period of two or three years ahead—well, more than that in the case of the construction of dams—about four or five years ahead. But in the end it turned out that we were getting a much better deal than we thought we would get.

Mr. DAVIS: It is my understanding that this index is put out specifically for earth and rock-filled dams, and is even broken down for the Pacific north-west area with the experience of all the projects in the northwestern part of this continent accumulated in this index, and that it has been trending steadily downward. I think that that type of information might usefully be produced.

The CHAIRMAN: Now, Mr. Pugh.

Mr. PUGH: Most of my questions have been answered, but just to button up, in regard to the payment received in this country for flood control in British Columbia: in comparison with the method of ascertaining flood control benefits elsewhere in the world, do you feel that we have received the best of the bargain? In other words, you felt that the total flood control in these states would amount roughly to \$100 million, and we are to be paid from one half to one twenty eighth?

Mr. KEENLEYSIDE: The answer to that I think is that we agreed that the principle worked out by the I.J.C. was a very sensible one. We believe that it

has been applied in this case, and we are satisfied that the computations on record in very great detail here give an accurate reflection of what was done, and we feel that in consequence of a study of the arrangement with the United States and Canada we are both profiting from this flood control agreement.

Mr. PUGH: That was my first question. The United States itself has a rather comprehensive grid system for power transmission. Would it be possible, for instance on the export of power from British Columbia, to be serving other than, say, Washington and Oregon? Would you go right down to California with our power?

Mr. KEENLEYSIDE: The situation at the moment is that there are a number of projects being reviewed in the United States which are designed to provide an interconnection between the northwest power pool and the consumers in California who are very anxious to have increased energy and whose needs are rising in an almost perpendicular manner. It is altogether probable that within the next two or three years at least one line will be established between these two areas, and it is quite possible that two or three lines may be put in there. If this should take place, and it is not impossible, if the United States entities in the northwest power pool wanted to get some additional power to sell to California or wanted to sell some of the power they now have to California, and to have its place taken by other power temporarily obtained from British Columbia, that we could accommodate them. I do not think it likely that we would take power from Revelstoke canyon or from Mica creek, or from the Peace, or some such area all the way down to California, but quite conceivably we might provide some of that power to the northwest power pool and by a bumping arrangement have other power go down to California.

Mr. PUGH: I think that covers that. There is the possibility of one thing; in the sale of power to the United States everything, of course, would go through the national energy board first of all?

Mr. KEENLEYSIDE: Yes; it would be necessary to obtain permission from the national energy board.

Mr. PUGH: What kind of term would you think the United States might require; that is, what term of years, or is that a closed question?

Mr. KEENLEYSIDE: Would you repeat the last part of your question, please?

Mr. PUGH: How long do you expect the term in years of any contract would be?

Mr. KEENLEYSIDE: With the United States for the sale of British Columbia power?

Mr. PUGH: Yes, for export.

Mr. KEENLEYSIDE: Their normal requirement, of course, would be 30 years, because 30 years roughly is the period in which it is expected a thermal plant would last in its first arrangement. For that reason there is a great deal of planning done on a 30-year basis, and that is why 30 years was put into this particular deal.

Mr. PUGH: Suppose we did enter into a good contract covering 30 years, do you feel we would have any trouble in recapture after that period of time?

Mr. KEENLEYSIDE: None at all, because the situation which existed back in 1917, 1918 and 1920 does not exist any longer. At that time the power that was being produced in Canada, particularly at Niagara, was being given to a specific consumer in the United States, and that consumer had only recourse to that power; if that power had been stopped they would not have been able to get additional power at that time. That was a very different situation from the one which exists now. At the present time the power that the United States

is getting into the northwest power pool from Canada under the agreement before the committee represents only about 5 per cent of their total usage, and by the time the agreement comes to an end, it probably will represent something like one per cent or one half of one per cent.

Today, with warning a few years in advance there would be no problem at all about getting them to release that to come back again.

Mr. PUGH: In your opening remarks you made reference to a question I had asked of, I believe, Dr. Kidd the day before. That was in reference to liability for damage. I would not come back to it, except I do believe it is something we should safeguard ourself in respect of in the event of trouble and water roaring down through the canyon into the United States and consequent flood damage which might be extensive. Were you in the room when I was questioning Dr. Kidd?

Mr. KEENLEYSIDE: No; I am afraid I was not.

Mr. PUGH: In your opening remarks you stated that we had considerable consultation with a whole host of engineers all over the world, and the United States as well. The suggestion I have is that we should have something a little closer than consultation; something a little more binding in the actual design and construction of the dam, so that they would be approving of everything we did.

Mr. KEENLEYSIDE: Mr. Pugh, under the arrangement that has been set out in annex A to the treaty, the United States entity with whom we will be dealing has to agree that the design specification that we are embodying in the dams will be sufficient to meet their needs. We have to tell them what we are doing and obtain their agreement that, in their opinion, what we are doing will be adequate to meet the needs.

Mr. PUGH: That is, the needs required under the treaty?

Mr. KEENLEYSIDE: That is right.

Mr. PUGH: I was thinking in the event of disaster. For instance, we have had a series of earthquakes. Suppose there is an earthquake which releases a flood of water; immediately then in the United States a good proportion of the citizens would say there was faulty construction or improper engineering. The basis of my idea is that we should have something more than consultation with engineers down there, so that in the event we do have a disaster their participation would have been right from the beginning and there could be no question of negligence at all which ever could arise.

Mr. KEENLEYSIDE: Participation of that sort by the United States might, in the unlikely event of a disaster, have some public relations value, but it would have no legal value whatsoever. You cannot share the responsibility in that way. So, apart from the fact that we would be able to say to the people in the United States that we are very sorry the dam was washed out but we told you people how we were building it and you agreed it was a good idea, this would be the only advantage in doing that. In the treaty in article XVIII there is a whole series of points on liability. I assume you are familiar with those?

Mr. PUGH: Yes.

Mr. DAVIS: There is a permanent joint engineering board.

Mr. KEENLEYSIDE: That is well worth mentioning. I am glad Dr. Davis brought that up. As you know, there is provision in the treaty for a permanent joint engineering board of Canada and the United States that will have a watching authority for everything that is being done. There will be two Canadians and two United States citizens on this board, and their responsibility is spelled out in article XVIII of the treaty. I do not know whether or not it

is your wish that I read the different sections of that, but this engineering board, which represents both countries, has a good deal of authority, if it wasn't to exercise it.

Mr. PUGH: But, in perusing that very quickly, it is my opinion that board would not have any authority whatsoever in regard to the actual construction or engineering works of the dams originally.

Mr. KEENLEYSIDE: The Board could interfere if it was felt they were being improperly done.

Mr. RYAN: I take it then, Dr. Keenleyside, the United States authorities will be watching the construction of all three projects.

Mr. KEENLEYSIDE: It is my understanding that the members of the engineering board are to be full time engineers, working on the job, and I am sure if they are full time they even might be a nuisance.

Mr. RYAN: And, is this from the very beginning of construction rather than from the time of operation?

Mr. KEENLEYSIDE: Right away.

Mr. PUGH: That is not my understanding of article XV.

Mr. KEENLEYSIDE: Article XV paragraph (e) says they will investigate and report on any other matter coming within the scope of the treaty at the request of either Canada or the United States, which gives them the opportunity.

Mr. PUGH: You are saying they will be in on the construction and all the way down the line?

Mr. KEENLEYSIDE: And (d) says:

Make periodic inspections and require reports as necessary from the entities with a view to ensuring that the objectives of the treaty are being met;

In other words, that the dams are going to be safe and sound.

(Interpretation)

Mr. LAPRISE: A moment ago you said that a number of employees would be required in respect of the Mica project; I would like to know how many of these employees will remain there after the completion of work for the purpose of doing maintenance?

(Text)

Mr. KEENLEYSIDE: The likelihood is that not very many of them will remain at the Mica site. There probably always will be a community there because Mica is going to be a very considerable tourist attraction and many people will go there. Undoubtedly there will be hotels or motels in the area and there will be a small community. But, the number of people employed on the dam itself, even if generation comes into full play, will not be very large. There probably will be a greater permanent increase in the number of people at Arrow than there will be at Mica.

Mr. BREWIN: Dr. Keenleyside I want to revert to some of the questions in respect of compensation.

Mr. Fairweather raised the problem in respect of business losses of people whose property was not actually expropriated but who were affected by what happened to the community. Now, I am not sure whether or not I got your answer. However, my understanding of the law would be that unless there is some special statutory provision such business owners would not be entitled to any compensation and, indeed, such compensation really could not be paid to them. Is there any special provision in the legislation which would change that?

Mr. KEENLEYSIDE: So far as I know, Mr. Brewin, there is no specific legislation designed for this purpose. I do not know whether or not it would be possible under some existing act or acts to provide for compensation for such people but we have been authorized by the government to use our own judgment in dealing with hardship cases. If we feel that a person has been seriously affected by what we are doing we can find some way of making that compensation, perhaps through paying increased amounts for whatever property he may have that is being damaged, by giving him additional money in connection with his moving to some other site, or some other means of that sort undoubtedly can be found. If this also fails and if we find we cannot properly do it under existing conditions then, in view of the repeated assurances of the government, I am sure it will see to it that these people are properly treated, and I assume the government will pass whatever necessary legislation or orders-in-council may be required to take care of them.

Mr. BREWIN: The reason I am particularly interested in this is my knowledge of the Gagetown, New Brunswick situation in respect of the army. In that case it was clearly decided that these particular types of losses were not compensable; whereas I believe there was special legislation in connection with the St. Lawrence seaway which conferred rights beyond the ordinary rights. I would be glad if you could bring this matter to the attention of the responsible authorities to ensure that whatever has to be done will be done to solve this problem.

Mr. KEENLEYSIDE: Certainly we will make sure whether or not the existing legislation is adequate and steps will be taken to deal with cases of a hardship character either by stretching the rights which have been given to us now—that is, the particular authority has been given to us now—or by inviting the government to make special provision through legislation.

Mr. BREWIN: I am not sure I heard correctly the words used by Mr. Williston when he mentioned the costs of the people concerned whose lands were being expropriated and in respect of appeals to the courts and so forth. I know, from some experience, these sometimes are very expensive proceedings. But, I understood Mr. Williston to say they were going to be looked after by the authority.

Mr. KEENLEYSIDE: I made a rather extensive reply yesterday to questions about methods of expropriation, pointing out that under existing legislation it is possible to carry on expropriation arrangements, agreements or proceedings without cost to the person who is being dispossessed and, secondly, that the whole situation in British Columbia is likely to change in some measure as a result of the royal commission, whose report is expected at any moment. This is the royal commission which was appointed for the purpose of recommending to the government new procedures in respect of expropriation.

Mr. BREWIN: Yes, but you will see the point I am making. I agree, if one can settle these problems the question of any expenses incurred and so on can be taken care of. But, if no settlement can be made and the claimant feels he has to take his case to a tribunal or court, then he may be involved in very serious expenses. Do you know of any provision that is made to look after these expenses?

Mr. KEENLEYSIDE: I am afraid I would have to leave that to one of our lawyers; I myself do not know of any such provision.

Mr. BREWIN: I have one other point to bring up. We all know when you have a large project of this sort and people are facing expropriation they get a lot of strange ideas in respect of the law and so forth. Is it proposed to send out to the property owners some sort of statement setting out their rights, for example some of the statements you have made here, so they will know where they stand in respect of these matters.

Mr. KEENLEYSIDE: A great many of the people in the area affected were present at the water comptroller's hearings which were held in a number of different towns in that region. Most of the others I assume read the very detailed reports which were published in the local papers. We have not thought of putting out any special publication in this regard but that may well be a good idea and I shall be glad to consider it.

Mr. BREWIN: Thank you.

There is just one other matter I should like to refer to at this point. I am not blaming you or your authorities at all in this regard, but I must say I was astounded by the terms of the authority act which provides in section 53, although unfortunately I have not got it with me, that no statute or statutory provision, with the exception I think of the Labour Relations Act and the workmen's compensation act, applies to the authority. I asked Mr. Williston about this situation and he suggested the reason for this is that your relations with labour have been so happy in the past you do not need the protection of ordinary laws. Was this provision sought by the authority, and can you give me any explanation why the authority, at least as I saw it, was put in the rather unprecedented position of being above the law in a great many respects?

Mr. KEENLEYSIDE: Mr. Chairman, in view of the fact that both Mr. Williston and the attorney general made rather extended replies on this point, and that it involves a question of domestic legislation in British Columbia, and because of the fact that the law has not been proclaimed, I think it would be improper for me to try to answer that question.

Mr. BREWIN: I must say that Mr. Williston referred us to you in this regard at one stage.

Mr. HERRIDGE: Mr. Williston said we should ask this question of Dr. Keenleyside.

Mr. MACDONALD: Mr. Chairman, in Mr. Brewin's absence yesterday we went into this question of labour and established very clearly that whatever the provisions of the hydro power corporation act, they were not relevant to the work on this particular project because there is an entirely different arrangement in that regard.

Mr. BREWIN: Mr. Chairman, I was not talking about labour only but about the particular provisions of the statute which exempted the authority from any statute in the province with the exception of the two named statutes. I found this to be such extraordinary legislation I wanted to find out how it came about.

Mr. MACDONALD: Mr. Chairman, surely we are now involved in questions in respect of the Columbia river treaty.

The CHAIRMAN: I think Mr. Brewin by his kind smile has indicated his general acceptance of that opinion.

Mr. BREWIN: Please do not misinterpret my smile. I was not smiling in any kindly way in regard to Mr. Macdonald's proposition, with which I fully disagree.

Mr. MACDONALD: Perhaps if Mr. Brewin had been present yesterday he would understand all about this situation.

Mr. BREWIN: Mr. Chairman, I follow the proceedings closely even when I have to be somewhere else.

Mr. BYRNE: Mr. Chairman, perhaps I could be allowed one or two minutes to ask several short questions?

The CHAIRMAN: Yes, and then we will allow Mr. Macdonald to ask his questions, but please bear in mind the time element involved.

Mr. BYRNE: Mr. Chairman, I wonder whether Mr. Keenleyside or one of his advisers could point out to the members of this committee on the map of the Arrow lakes area that general area within which these 50 lineal miles of sandy beaches are located?

Mr. KEENLEYSIDE: Mr. Chairman, we have heard a great deal about the 50 miles of sandy beaches but in fact we are unable to identify the locations.

Mr. BYRNE: Do you feel you have sufficient knowledge of geology to recognize sand, taking into consideration an answer you gave earlier today in respect of your limited knowledge of geology?

Mr. HERRIDGE: The member from Kootenay West can recognize sand. There is no question about its location. It is between Nakusp and Castlegar.

Mr. BYRNE: You are not convinced that there are 50 lineal miles of sandy beaches?

Mr. KEENLEYSIDE: Mr. Chairman, I have made inquiries, following my first reading of this statement, of a number of people with rather long time residence in that area and, in some cases, who have had responsibility in relation to this kind of thing, and so far I have been unable to find confirmation of the statement. That is all I can say.

Mr. BYRNE: This must be another one of those statements.

Mr. HERRIDGE: It is nothing of the sort.

Mr. BYRNE: I should like to ask a more technical question and hope it will not take too long to answer.

The CHAIRMAN: I hope the question will not be provocative.

Mr. BYRNE: In Mr. Kennedy's reply to Mr. Davis regarding the question of co-operation between the entities there was no mention of integration, making use of standby generation. Is there any possibility that in the future, when you have completed the interconnections which you outlined on the map yesterday, and I refer to the high voltage interconnections with the United States, the plants may be more generally integrated for use on other than an emergency basis in respect of greater requirements in one country at one time of the day, year, week or month as opposed to the other country, similar to the equa-change arrangements which have been made by the Consolidated Mining and Smelting Company and the Bonneville Power Corporation?

Mr. KEENLEYSIDE: Perhaps I could give you a general answer to that question. I would envisage something developing in the area between British Columbia and the northern United States comparable to what has already developed on the boundary between Ontario and New York. Mr. Kennedy can perhaps give you a better reply.

Mr. DAVIS: These advantages have not been assessed or included in any of the presentations given so far?

Mr. KEENLEYSIDE: No.

Mr. BYRNE: You will recall that I said yesterday there was considerable apprehension on the part of the people living in the east Kootenay area which will be affected by the Libby storage project. These people have been waiting for some 20 years for a decision in this regard. Under the terms of the draft treaty the United States authorities have five years in which to make up their minds whether they will go ahead with the construction of the Libby project. Do you anticipate that once we have ratified this agreement it will take two, three or even five years before we receive a definite statement of intent?

Mr. KEENLEYSIDE: I should not want to be held responsible for the accuracy of guessing what the United States congress is going to do. However, if I were in the habit of making bets I would make a very large one that they will go ahead with this immediately.

Mr. BYRNE: Thank you.

Mr. MACDONALD: Dr. Keenleyside, I should like to ask one question in connection with the suggestion arising out of Mr. Cameron's question earlier that there might be encumbrance charge on the government of Canada in connection with foreign exchange. Is it not a fact that there may be a charge in respect of the operation of the foreign exchange account whatever project is involved and that this is not something exclusively related to the Columbia river development? If British Columbia, instead of selling power downstream, borrowed the money on a funded basis the same charge would exist? This foreign exchange charge cannot be related to one plan or one project; is that right?

Mr. KEENLEYSIDE: Yes. Mr. Cameron is, of course, correct to extent. The handling of any foreign exchange transaction costs a certain amount of money. What he was arguing in fact was this, that it is unfortunate that we are getting an additional \$254 million in United States funds in our foreign exchange fund because it will cost a little bit of money.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, excuse me. I will not sit here and listen to Dr. Keenleyside completely misrepresent what I have said without objecting.

The CHAIRMAN: I do not think we should argue with the witness.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I made no such statement. I am not going to have that sort of statement put on the record without protesting.

Mr. HERRIDGE: Hear, hear, repeatedly.

The CHAIRMAN: Order, Mr. Herridge.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This question apparently is completely misunderstood by both Mr. Macdonald and Dr. Keenleyside. If you refer to the evidence given by the Hon. Paul Martin, which is now available, you will see that in that evidence Mr. Martin agreed with me, that because of the special arrangements that have been made with the United States government to prevent the sudden transfer of 250 million United States dollars to Canada, in view of their own exchange difficulty, the government of Canada has agreed to take instead United States treasury bills and notes on which it will draw a lower rate of interest than the rate it would have to pay for money borrowed to pay a lump sum to British Columbia. Mr. Martin told me that the government of Canada would assume the cost of that disparity in interest rates. If you want to dispute Mr. Martin's statement that is your privilege.

Mr. KEENLEYSIDE: If I am not entirely out of order, perhaps I might ask Mr. Cameron a question. Suppose we made a deal with the United States and sold them \$250 million worth of wheat. Would not the same circumstances exist? Would not the United States still object under existing conditions to the sudden transfer of that amount of money back to Canada? Would it not cost them the same amount that is involved in this transaction, and yet would it not be a desirable thing to do? That argument does not make any sense.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am not making an argument; I am just telling you what has been done. British Columbia, instead of merely getting the net returns from the United States are getting the gross returns, and the government of Canada is picking up the discrepancy.

Mr. KEENLEYSIDE: We cannot let that stand, Mr. Chairman. Is the assumption inherent in what Mr. Cameron has said that we are not getting any advantages out of having \$250 million put in the exchange fund?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): We are not getting this in our foreign exchange fund. Get this through your head.

Mr. DAVIS: Surely this is a question which could be put to one of the federal witnesses.

The CHAIRMAN: We are verging on the relevant here.

Mr. PATTERSON: Could Mr. Martin clear this up? I would ask you to note, Mr. Chairman, that it is now twenty-five minutes to one.

The CHAIRMAN: Dr. Keenleyside would like to complete one very brief comment. I believe he has a plane to catch, if at all possible.

Mr. KEENLEYSIDE: I have plenty of time until at least one-thirty, if you want to go on. I am quite prepared, if it is the wish of the committee, to come back at any time from Monday on. However, before I stand down I would like to impose on the good will of the committee to make a brief, rather personal, statement about certain matters that seem to me appropriate to be brought up by me at this particular point.

As you know, Sir, if this treaty is ratified, the British Columbia Hydro is going to be the chief *organizational* beneficiary of the new arrangements. Because of that fact we have, from the very beginning, had a very direct and personal interest in the conduct of the negotiations, and we have followed very carefully indeed the way in which our representatives—both federal and provincial—have performed in the advocacy of our joint interests.

What I propose to say about the way we have been represented does not refer in any way to the work of the various ministers who have participated because if I were to praise them it might well be considered that I was just engaging in the old sport of apple polishing, and I do not want to be accused of that. In any case, the ministers who have taken part in the negotiations are well known to the members of this committee—I am speaking about people like Mr. Martin, Mr. Williston, Mr. Bonner—and earlier on Mr. Fulton, Mr. Hamilton, Mr. Dinsdale and others. Their abilities are such that they need no words of praise from me. Moreover, of course if necessary they are in a position to speak for themselves. Above all, Mr. Chairman, I want to make it perfectly clear that what I am going to say has no reference to myself. As a participant in the policy decisions which have been taken in connection with this project I am fair game and I have no objection, in fact I am very gratified and proud, to be charged with partial responsibility for the result of the negotiations.

However, I do want to refer, Mr. Chairman and gentlemen, to representatives of the public services of Canada and British Columbia who by tradition and good taste are not permitted to speak for themselves.

It is now, sir, almost 15 years since I was a member of the public service of Canada and I think I can speak about it with a certain objectivity. During those years I have had rather unusual opportunities to see our senior officials at work, both at home here in Canada and in an international setting. As a result I accept without hesitation the views that I believe are held by almost every informed observer that Canada has a remarkably fine group of senior public servants. It is, I think, the agreed view of experts everywhere, experts in public administration, that there is no better civil service in the world than the civil service of Canada. It is true of course that we do not have the depth in numbers which is found in the public service of Great Britain and France, but our first team was recognized everywhere as being of quite outstanding quality.

Now, Mr. Chairman, the present Clerk of the Privy Council and the head of the economic division of the department of external affairs, who took a prominent part in the negotiations from the beginning of the talks on this Columbia treaty, are and have been for a long time recognized as members of that first team, and very distinguished members of it. They have been confirmed in their positions by successive federal administrations, and they are certainly among our most competent and distinguished officials.

I wish also to say something about the technical advisers who supported us through our negotiations with each other—British Columbia and Canada, and with the representatives of the United States. After a good many months of close association with these men I want to go on record as saying that I consider them to be a group of exceedingly able, conscientious and devoted members of the public service. Canada and British Columbia have no more loyal and more competent officials.

In some cases, to my own certain knowledge, members of this group have stayed in the direct service of their country in spite of repeated temptations to accept business or professional opportunities that would mean a greatly increased income. It is quite possible that they could double their salaries outside the service. I know at least two of these men have on their desks at this minute very tempting offers of appointment elsewhere. Another member of the group received an invitation to enter the public service (through a crown corporation) of another country at a very considerable financial profit, an offer that was refused because the officer concerned was determined to continue to work in and for Canada. The importance of decisions like this to our country can only be fully appreciated by those who have some realistic conception of the complexity and of the value of the work that these officials have been doing.

And so, Mr. Chairman, I believe I am fully justified as a Canadian citizen in objecting most strongly to the attacks that have been made on these senior officials and these highly competent technical advisers in the House of Commons, attacks which in my opinion are as unjust in substance as they are deplorable in taste and as they are constitutionally improper.

Mr. RYAN: I appreciate this statement by Dr. Keenleyside. I noticed he had made particular reference to Mr. Dinsdale being the negotiator. Mr. Dinsdale is also a member of this committee. I think he has, maybe inadvertently, omitted to mention Mr. Jack Davis who has also been a main negotiator, particularly since this government has come into office.

Mr. KEENLEYSIDE: I only mentioned ministers. That is why I omitted him.

Mr. RYAN: It was brought to my mind that the committee and the public should be made aware of the fact that Mr. Jack Davis has not only been associated and very influential in connection with these negotiations but also has been a leader of opinion among politicians, both provincially and federally in doing a great deal to convince the Canadian public that this is a good treaty.

Mr. BREWIN: We should adjourn this mutual admiration society. It may go too far before we are through I am not complaining about what has happened to date, but let us not go any further.

The CHAIRMAN: We do have the privilege of having in future a distinguished international engineer and illustrious gentleman, General A. G. L. McNaughton appear before us. We will therefore adjourn until Monday at four o'clock when we will hear General McNaughton's presentation.

APPENDIX L

BENEFIT/COST STUDIES OF DUNCAN AND HIGH ARROW PROJECTS

| | Duncan 1st Added | | High Arrow 2nd Added | |
|--|------------------------------|------------|------------------------------|-------------|
| | Downstream Power Entitlement | Value | Downstream Power Entitlement | Value |
| | | \$ | | \$ |
| 1. 1964 Value of Benefits¹ | | | | |
| Capacity ² —Sales Agreement.... | 2,522,000 KW | 14,981,000 | 9,520,000 KW | 56,549,000 |
| Residual..... | 59,000 KW | 350,000 | 210,000 KW | 1,247,000 |
| Energy ³ —Sales Agreement..... | 1,236,000 KW YR | 31,567,000 | 4,581,000 KW YR | 116,999,000 |
| Residual..... | 77,000 KW YR | 1,967,000 | 297,000 KW YR | 7,585,000 |
| Flood Control..... | | 10,109,000 | | 45,189,000 |
| Total 1964 Value of Benefits.. | | 58,974,000 | | 227,569,000 |
| 2. 1964 Value of Costs¹ | | | | |
| Capital Cost..... | | 26,584,000 | | 103,591,000 |
| Operation and Maintenance.... | | 3,053,000 | | 13,888,000 |
| Water License..... | | 917,000 | | 3,356,000 |
| Head Office Expense..... | | 766,000 | | 2,955,000 |
| Total 1964 Value of Costs.... | | 31,320,000 | | 123,790,000 |
| 3. BENEFIT/COST RATIO..... | | 1.9 | | 1.8 |

¹ Adjusted to 1964 value using 5% interest rate.² Capacity valued at \$5.50 (U.S.)/KW = \$5.94 (Can.)/KW.³ Energy valued at \$23.65 (U.S.)/KW = \$25.54 (Can.)/KW YR.

BENEFIT—COST STUDIES

| | Mica Storage 3RD Added With Mica Generation and Canal Flats Diversion ¹ | |
|--|--|---------------|
| | Power Value | Dollar Value |
| 1. 1964 Value of Benefits⁵ | | |
| Downstream Power Entitlement ² | | |
| Capacity—Sales Agreement..... | 3,452,000 Kw | \$ 20,505,000 |
| Residual..... | 45,000 Kw | 267,000 |
| Energy—Sales Agreement..... | 1,339,000 Kw Yr | 34,198,000 |
| Residual..... | 95,000 Kw Yr | 2,426,000 |
| Mica Generation Benefits ³ | | |
| Capacity..... | 12,690,000 Kw | 160,402,000 |
| Energy..... | 8,397,000 Kw Yr | 198,589,000 |
| Flood Control Benefits..... | | 856,000 |
| 1964 Value of Total Benefits..... | | \$417,243,000 |
| 2. 1964 Value of Costs⁵ | | |
| Mica Storage Project and O & M Costs..... | | 170,981,000 |
| Mica Generation and O & M Costs..... | | 102,812,000 |
| Mica Transmission Costs ⁴ | | 110,331,000 |
| Attributed Costs of Canal Flats Div..... | | 1,954,000 |
| Water License Fees..... | | 987,000 |
| Head Office Expense..... | | 770,000 |
| 1964 Value of Total Costs..... | | \$387,835,000 |
| 3. Benefit/Cost Ratio..... | | 1.1 |

¹ Additional Downstream Power Benefits at the Downie Creek, Revelstoke Canyon Projects Attributable to Mica Storage Not Included in Analysis.² Capacity Valued at \$5.94 (Can.)/Kw, Energy Valued at \$25.54 (Can.)/Kw Yr.³ Capacity Valued at \$12.64/Kw, Energy Valued at \$23.65/Kw Yr.⁴ Average Cost for Transmission assumed at 1.5 mills/Kwh of Energy Delivered at Vancouver.⁵ 1964 Value of Costs and Benefits Computed at 5% Interest.

HOUSE OF COMMONS
Second Session—Twenty-sixth Parliament
1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 9

MONDAY, APRIL 20, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESS:

General the Honourable A. G. L. McNaughton

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--------------------------------|----------------------------|----------------|
| Brewin, | Fleming (<i>Okanagan-</i> | Macdonald, |
| Byrne, | <i>Revelstoke</i>), | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Forest, | Martineau, |
| Cameron (<i>Nanaimo-</i> | Gelber, | Nielsen, |
| <i>Cowichan-The Islands</i>), | Groos, | Patterson, |
| Cashin, | Haidasz, | Pennell, |
| Casselman (Mrs.), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Langlois, | Turner, |
| Dinsdale, | Laprise, | Willoughby—35. |
| Fairweather, | Leboe, | |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

MONDAY, April 20, 1964.

(16)

The Standing Committee on External Affairs met at 4.00 p.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Brewin, Byrne, Cadieux (Terrebonne), Cameron (Nanaimo-Cowichan-The Islands), Chatterton, Davis, Deachman, Dinsdale, Fairweather, Gelber, Groos, Haidasz, Herridge, Kindt, Klein, Laprise, Leboe, Matheson, Patterson, Pennell, Pugh, Ryan, Stewart, Turner, Willoughby—(26).

In attendance: General the Honourable A. G. L. McNaughton; Mr. Larratt Higgins, Economist, Hydro-Electric Power Commission of Ontario; Mr. James Ripley, Editor, Engineering and Contract Record Magazine.

The Chairman announced that correspondence pertaining to the Columbia River Treaty and Protocol has been received from the following since the last meeting; Secretary-Treasurer, United Electrical, Radio and Machine Workers of America; Bonnington-South Slokan Women's Institute, South Slokan, B.C.; F. Tomkinson, Vancouver, B.C.; L. W. Chatham, Nelson, B.C.; West Kootenay Rod and Gun Clubs Association, Trail, B.C.; C. M. Campbell, Mining Engineer, Vancouver, B.C.

The Chairman read into the record a letter from the Secretary of the Hydro-Electric Power Commission of Ontario, stating that any opinions expressed by Mr. Larratt T. Higgins before the Committee are his own personal and individual views. (*See Evidence.*)

The Chairman also read into the record a telegram from the Chairman of the Joint Council of Unions of the British Columbia Hydro and Power Authority. (*See Evidence.*)

The Chairman introduced General McNaughton who presented a statement on the Columbia River Treaty and Protocol, and was questioned.

During the presentation and questioning, General McNaughton referred to maps and charts which were on display, and the Committee directed that these be reproduced for inclusion in the printed Proceedings. Later General McNaughton pointed out that maps were sketches only and were not drawn to scale; he offered to have them re-drawn to scale and the Committee therefore directed that the *printing of the maps* presented by General McNaughton be withheld until they are re-drawn.

At 6.00 p.m. the Committee adjourned until Tuesday, April 21, 1964, at 10.00 a.m.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

MONDAY, April 20, 1964

The CHAIRMAN: Gentlemen, I see a quorum.

In accordance with our previous practice I would like to read to you at this time a list of correspondence which has been received in respect of the Columbia River Treaty and Protocol. This correspondence has been received since our last meeting.

We have received correspondence from the secretary treasurer, United Electrical, Radio and Machine Workers of America; a letter from Bonnington South Slokan women's institute, South Slokan, B.C.; a letter from F. F. Tomkinson, Vancouver, B.C.; L. W. Chatham, Nelson, B.C.; West Kootenay Rod and Gun Clubs Association, Trail, B.C.; C. M. Campbell, mining engineer, Vancouver, B.C.; and a letter from the Hydro Electric Power Commission of Ontario in respect of the appearance of Mr. L. T. Higgins on April 29. In fact, Mr. Higgins is with us today as an adviser to General the Honourable A. G. L. McNaughton. With your permission, I will read that letter into the record at the present time.

This letter is from E. B. Easson, secretary, the Hydro Electric Power Commission of Ontario, is dated April 17, 1964 and reads as follows:

Dear Mr. Matheson:

Mr. L. T. Higgins has requested permission of the commission for leave of absence to appear before the standing committee on external affairs on the matter of the Columbia river treaty and protocol, in accordance with your letter of April 14, 1964.

In granting this request, the Commission has directed me to inform you that any opinions expressed by Mr. Higgins before the standing committee on external affairs with respect to the Columbia river treaty and protocol are his own personal and individual views. His views arise out of his experience in 1958 when he was on loan from another company as a technical adviser to an interdepartmental committee of economists of the federal government which was established to study the Columbia river.

In order to avoid any misunderstanding in this regard, it would be appreciated if you, as chairman of the committee, would place this letter on record of the hearings of the standing committee on external affairs.

Mr. HERRIDGE: Mr. Chairman, may I say we all understand the commission has to be neutral and we congratulate them on their recognition of democratic principles and their desire to provide opportunities for this committee to hear all sides of the question.

The CHAIRMAN: I have received a telegram under date of April 17, 1964, addressed to the chairman and members of the external affairs committee. This telegram was sent by John L. Hayward, chairman of the joint council to unions of the British Columbia Hydro and Power Authority. The telegram reads as follows:

The joint councils of the unions of Hydro and Power Authority representing the 5,000 employees of this crown company unanimously request

your committee declare *ultra vires* that section of bill 14 that denies hydro authority employees the right to strike as this is contrary to the principle of natural justice.

Mr. BREWIN: Hear, hear.

The CHAIRMAN: I continue:

Previous to the takeover of the British Columbia Electric Company by the provincial government said employees had all the rights that workers in the province enjoy including the right to strike. We fervently urge the return of this right.

That is the end of the telegram.

Gentlemen, I have not read this telegram until this moment. I have read it because it was drawn to my attention by Mr. Herridge.

Mr. PUGH: What was the time?

The CHAIRMAN: April 17, 1964.

Mr. PUGH: And, the time of origin?

The CHAIRMAN: I do not believe there is a time on the telegram.

Mr. PUGH: Well, there should be.

The CHAIRMAN: I think we could discover that. The only point I am raising is this: surely, as a committee, we cannot accept as a principle that if people simply communicate by means of a letter or telegram to the chairman and members of the committee action, therefore, would establish a precedent whereby that communication would be read into this record.

I leave it to the committee to guide me on this matter. However, it would seem to me it would be a very poor practice indeed if because I simply report to the committee what communications have been received I would be compelled hereafter to read what happens to be addressed to both me, as chairman, and to you, as members of the committee.

Mr. CADIEUX (*Terrebonne*): Mr. Chairman, would it be appropriate to refer at this time to the terms of reference of this committee to ascertain whether or not this is relevant to the subject we should be discussing. It seems to me this is an internal matter between the British Columbia Hydro and their employees and, therefore, it is a provincial matter and should have nothing to do with this treaty.

Mr. PUGH: Mr. Chairman, in view of the fact that General McNaughton is here and is ready to proceed I would request that we hold this other matter in abeyance for the time being and, perhaps at a later time, this can be cleared up. At the present moment let us get on with the business at hand.

The CHAIRMAN: Is that agreed?

Some hon. MEMBERS: Agreed.

Mr. HERRIDGE: Mr. Chairman, we did have an understanding that letters would not be read. But, this telegram which was addressed to the chairman and the members, is in respect of 5,000 employees who are very concerned about this legislation and, in view of the number of persons directly affected and because we have discussed this question with the attorney general of British Columbia and the chairman of the British Columbia Hydro and Power Authority, I feel we are justified in putting this on the record.

The CHAIRMAN: Mr. Herridge, I have done what you asked me to do and I did it without even first reading it. However, I do not think we should continue with this practice because we are putting on the record material which should be the subject of cross-examination of a witness.

Mr. LEBOE: In my opinion, Mr. Chairman, it is not within the jurisdiction of this committee to decide an issue between a power authority in British Columbia and that government.

The CHAIRMAN: Yes. I have the terms of reference of March 9, 1964, where it was ordered that the treaty between Canada and the United States of America relating to co-operative development of the water resources of the Columbia river basin, signed at Washington on January 17, 1961, together with the protocol containing modifications and clarifications to the treaty annexed to an exchange of notes between the governments of Canada and the United States signed on January 22, 1964, be referred to the standing committee on external affairs.

Perhaps we should leave this matter at this time.

I have the great honour now to present to the committee a most distinguished Canadian and, indeed, a Canadian of wide international reputation, General the Honourable A. G. L. McNaughton, who now will give his initial submission prior to questioning.

Mr. TURNER: Mr. Chairman, if I may interrupt before the General proceeds, do I understand there has been distributed to the committee the comments in respect of the Columbia river treaty and protocol by the Montreal Engineering Company?

The CHAIRMAN: Mr. Turner, I am told that their brief was distributed by mail this morning.

Mr. DINSDALE: I have not received a copy yet.

The CHAIRMAN: I am advised the Montreal Engineering Company will be appearing on Thursday, and I trust that all members will receive this presentation without delay.

Mr. HERRIDGE: We surely will have it by then.

General the Hon. A. G. L. McNAUGHTON: Mr. Chairman, I believe it is customary to table a list of engineering experience and I give that to you at this time for the record.

Mr. BREWIN: Mr. Chairman, before the general proceeds may I say he did speak of his qualifications. I understand this document he has filed contains a list of his engineering qualifications. May we have that read into the record at this time?

The CHAIRMAN: I would be very pleased to read this to the committee. Actually, as I recollect our practice, the first person who questions the witness asks what his or her qualifications are. But, I would be happy to read this into the record at this time, if I may.

Mr. HERRIDGE: Would you read it now, please.

The CHAIRMAN: The following is a list of the engineering experience of General the Hon. A. G. L. McNaughton.

Engineering Experience

A. G. L. McNaughton

Electrical engineering at McGill university: B.Sc. 1910 and M.Sc. 1912; lecturer, 1912-1914, worked for Dr. L. A. Herdt, professor of electrical engineering on high voltage transmission until 4 August 1914.

1914, mobilized, Montreal field battery for service World War I.

Post World War I: Represented Department of National Defence on Canadian government policy committee on St. Lawrence power and navigation project, 1923-1926. President, national research council, 1935-1939. 17 October 1939, recalled to Canadian army to command 1 Canadian division.

Post World War II: president, atomic energy control board of Canada; representative of Canada on United Nations atomic energy commission, 1946-1949; represented Canada on security council, 1948-1949; chairman, Canadian section International Joint Commission, 1950-1962. In this role was concerned particularly with the following engineering matters: St. Lawrence navigation and power project, water levels of lake Ontario, Niagara Falls preservation and power, Passamaquoddy tidal power, Souris river irrigation and power, Waterton-Belly rivers irrigation, Columbia river reference and numerous other applications and references relating to boundary waters.

Professional engineering societies (in various grades): engineering institute of Canada (1912); American institute of electrical engineers (1913); institution of electrical engineers (1913); association of professional engineers of Ontario (1950).

The CHAIRMAN: General McNaughton, I am glad I was not asked to read a list of your other accomplishments because I probably would have taken up most of the time we have for questions.

Mr. McNAUGHTON: Thank you, sir.

Mr. Chairman, members of the committee, may I say that ever since the signature of the Columbia river treaty on 17 January 1961 I have looked forward to having the opportunity to appear before you and your colleagues of the House of Commons in this committee so that I might be able to bring to your attention certain of the provisions of this document which I believe to be contrary to the rights and proper interests of Canada and which result in a plan of partial development and an interim regimen of operation and use of the water resources of the Canadian portions of the upper Columbia and Kootenay rivers which are not only partially efficient in the present, but which are contrary to the well-established principles of river basin development and which consequently for the future foreclose the possibilities for eventual "best use" of these resources in the service of our country.

In the more than three years which have elapsed since the Columbia river treaty was signed, and failing the reference to this committee of the grave matters at issue, I have endeavoured to the best of the possibilities open to me to bring these matters to attention for the information of the Canadian public, and to this end among other papers I published an article in the International Journal which appears in Vol. XVIII, No. 2, the issue for the spring of 1963.

I am grateful to you, Mr. Chairman, for the republication of this article in the form of a presentation by myself to this committee and I hope it will prove a convenient source of reference for your members.

Mr. Chairman, I do not propose at this time to take up the time of this committee by reading this document because it is now on the record, but I will be happy to answer questions on any aspect which you may wish and to further develop the argument.

Meanwhile, I would like to observe that in the course of the last six months, on the initiative of the Secretary of State for External Affairs, we have had a number of discussions on the Columbia river treaty of 1961 followed by an extensive interchange of correspondence in which various matters have been raised, including my views in opposition to the inclusion of Libby and High Arrow in the plan development.

You will find these same views expressed in the records of this committee going back to the time when you were dealing with the International Rivers Bill, which subsequently was enacted by the parliament of Canada and became law under the designation "The International Rivers Improvement Act".

May I say, at this time, that all the subsequent information which I have obtained through the international joint commission and otherwise has reinforced my conviction that neither of these projects should be accepted by the government of Canada in any plan of development.

Libby is a straight giveaway of the beneficial effect of some 5.8 million acre-feet of average annual flow originating in Canada in the east Kootenay, through some 600 additional feet of Canadian head.

High Arrow is a project which is of limited usefulness either for regulation for power or for flood protection in Canada, and which under the latest information available has become so expensive that its estimated cost exceeds that of the alternative projects in the east Kootenay which would make use of the Canadian flows through a very much greater head in Canada.

In my presentation to you today I propose to deal particularly with the arrangements for the regulation of the Canadian storages for power and flood control set forth in the Columbia river treaty (1961) and as proposed to be modified in the protocol (1964).

May I say also, Mr. Chairman, that I am grateful to you for the publication of this series of letters interchanged by Mr. Martin and myself. I believe Mr. Martin had the same idea because when I submitted the list to the secretary I found that he had already put forward the same papers with some additions to which I will make reference later.

This next section of my paper deals with provisions and important omissions in relation to regulation for power and flood control.

Mr. KINDT: Mr. Chairman, since this is very very important in terms of details I suggest that we should be permitted as we go along to ask the general certain questions. I feel that we will bring out more of the discussion in regard to this statement if we ask questions as we proceed through the presentation.

The CHAIRMAN: Mr. Kindt, General McNaughton has prepared his submission and knows the order of logic with which it was prepared.

Mr. KINDT: I am agreeable to any method of procedure.

The CHAIRMAN: I am afraid that interventions such as you have suggested as we go along will tend to disrupt what the general seeks to do by this presentation. Perhaps you could find it possible to make notes as we go along which will permit you to question the general at the appropriate time in the order in which he has presented his argument. I think this would be a very helpful procedure.

Mr. BYRNE: Mr. Chairman, I should like to ask whether it was an understanding that submissions were to be in our hands sometime before the appearance of the witnesses enabling General McNaughton and other witnesses to summarize the submissions when they appear before this committee? Am I right in concluding that this 27 page brief is a summary of a submission which I do not have in my possession?

The CHAIRMAN: All members of this committee will remember that the committee did agree that we would invite witnesses to furnish us with papers so that we would have them in our hands in time to distribute well in advance of the witnesses' appearance. This suggestion was made in order to expedite and make more fruitful the deliberations of the committee. The general was not able to furnish your Chairman with a copy of the material until Friday of last week. Therefore, I offer this information by way of an explanation for the information coming to the members as late as it has. Under these circumstances I can see no other alternative but to allow the general to present his material in his own way.

Mr. KINDT: I agree with that statement.

Mr. HERRIDGE: Mr. Chairman, that is the procedure we have followed in respect of other witnesses who were caught short in the preparation of their material.

Mr. KINDT: Mr. Chairman, I want to see all of the details brought out, and that is the reason for my suggestion.

Mr. BYRNE: Mr. Chairman, is this a summary of a submission which has been presented by the general?

The CHAIRMAN: General McNaughton has been good enough to refer in his earlier remarks to another document. This is a submission to which he will make reference. It is the International Journal, Volume XVIII, No. 2 of the spring of 1963. I believe this document is in the hands of all members of the committee.

Mr. BYRNE: That document has not been placed in my hands, but perhaps that is because my secretary did not bring it to my attention.

II Comment on the Columbia River Treaty (17 January, 1961) and the Protocol (22 January, 1964)

Provisions and Important Omissions In relation to Regulation for Power and Flood Control

It is noted that the protocol makes no proposal for change in article IV paragraphs 1 and 2(a) of the Columbia river treaty.

These are the basic provisions under which, in relation to power and flood control, an undue amount of Canadian storage is placed under the jurisdiction of the United States not only during the life of the treaty (60 years from ratification date) but thereafter—forever—directly for flood control, but with immense indirect, and undefined, benefits to hydro-electric generation in the United States.

In view of the vital significance of these paragraphs of article IV, I venture to mention the more important provisions and to comment thereon.

In paragraph 1 it is provided that "Canada shall operate the Canadian storage (that is the 15.5 million acre feet provided by article II) in accordance with annex A and pursuant to hydroelectric operating plans made thereunder". That is a quotation from the treaty. And in paragraph 2 "For the purpose of flood control until the expiration of sixty years from ratification date, Canada shall

"(a) Operate in accordance with annex A (See paragraph 5) and pursuant to flood control operating plans made thereunder"

| | |
|---------------------|------------------------|
| i Mica | .08 million acre-feet |
| ii High Arrow | 7.10 million acre-feet |
| iii Duncan | 1.27 million acre-feet |
| Total | 8.45 million acre-feet |

"The Canadian entity may exchange storage in ii for storage in i" "if the entities agree that the exchange would provide the same effectiveness for control of floods on the Columbia river at The Dalles, Oregon".

Note that in both paragraphs (1) and (2) of article IV of the treaty in each case the instruction to Canada is in the imperative, and it is well to recall that in the later articles of the treaty, article XVI, settlement of differences, and article XVIII, liability for damage, a very complete and novel code of water law is set up to provide for the enforcement of the rights with which the United States becomes endowed once the treaty is ratified. Moreover in article XVI it has been provided that the parties "shall accept as definitive and binding and shall carry out any decision of the International Joint Commission or of an arbitration tribunal."

In respect to flood control, the aspect which is under particular consideration in clause 1 of the protocol, the Canadian entity may request exchange of flood control storage but decision rests with the United States.

Annex A, paragraph 5, provides that for flood control operation "the United States entity will submit flood control operating plans which may consist of or include flood control storage reservation diagrams and associated criteria for each of the dams".

The word submit, implying reference to some superior authority, is deceptive, for the next sentence directs that "The Canadian entity will operate in accordance with these diagrams or any variation which the entities agree will not derogate from the desired aim of the flood control plan".

Note that the authority to order is vested in the United States and no variation can be made by Canada unless agreed. That is, subject only to consultation with the Canadian entity and within specified limits of storage capacity, rate of discharge, schedule of reservations given in Appendix A 5 (a) (b) and (c), the control to be exercised by the United States entity is absolute.

"Aim" "desired"—of and by whom? It is obvious from the "intent" defined in the preamble to the treaty of 1961 collectively that it is the desires of the United States entity primarily which must be met.

Annex A, paragraph 5 continues—

"The diagrams will consist of relationships specifying the flood control reservations required at indicated times of the year for volumes of forecast runoff".

After consultation with the Canadian entity the United States entity may from time to time as conditions warrant adjust these storage reservation diagrams within the general limitations of flood control operations.

Note that not even agreement by Canada is required.

The general limitations are defined in Annex A, paragraph 5, as follows:

| MAF Evacuation | | | |
|----------------|------------|-------------|------------------------|
| | Reservoir | if required | By date |
| (a) | Mica | .08 | 1 May |
| (b) | High Arrow | 7.10 | 1 May |
| (c) | Duncan | 1.27 | 1 May (0.7 by 1 April) |
| | | <hr/> | |
| | | 8.45 | |

All of which, subject only to restriction on rate of flow, Annex A paragraph (3), will be carried out by the Canadian entity as required by the United States entity. There is no specified restriction that when expected flows are small these evacuations are to be reduced. It is most important they should be for when expected flood flows are small then, also, the total runoff is usually small and it is especially important that available supply be conserved for essential uses and not wasted in unnecessary precautions.

For this reason a deterrent to abuse by the United States entity should be incorporated in the treaty.

However, as matters stand, clearly within the limits of capacity available and of some restriction on rates of flow, the United States has full control of evacuation of the Canadian reservoirs.

The word "the" refers to Mica, Arrow and Duncan.

Annex A 5 goes on to prescribe that "refill will be as requested by the United States entity after consultation with Canada". However "after consultation" means that the United States has jurisdiction to decide.

In the subsequent sub-paragraphs (a) (b) and (c), requested becomes if required, and there is no doubt the United States is in a position to demand the service stated.

The right given to United States to control refill is particularly serious for Canadian interests because the capacity of the reservoirs at Mica and High

Arrow are so large that, by the exercise of this authority, it is possible for the United States entity to dictate the actual flows in the river for extended periods. The only restriction is the safeguard of the minimum flows specified in Annex A 4 as follows:

| Reservoir | Min rate of flow, c.f.s. | Comp with ave annual rate of flow, c.f.s. | Canadian-at-site plants affected |
|-----------|--------------------------|---|---|
| Mica | 3000 | 20,100 | Mica, Downie, Revelstoke Canyon, Murphy |
| Arrow | 5000 | 38,000 | Murphy |
| Duncan | 1000 | 3,520 | West Kootenay, Murphy |

It will be observed that the minimum flows so reserved to Canada are trivial in comparison with the average annual flows at the Canadian sites in question which are affected.

It is wise not to be under any delusion as to what Canada may expect from the exercise of this authority by the United States. For example, on the Pend d'Oreille where the United States is already in control, physically as well as jurisdictionally, of the upstream storage the flows at Waneta are so reduced in the late summer in the interest of United States system benefits that only one of these Canadian units out of a total of 4 (3 of which have been installed) can be operated.

The clause in Annex A paragraph 5 that "refill will be as requested by the United States entity after consultation with the Canadian entity" should be rejected. I repeat, this authority is capable of abuse with exceedingly serious consequences to Canada in power production. I recommend therefore that this provision be eliminated.

May I again remind this committee that the Protocol does not deal in any way with the operations of the 8.45 million acre feet assigned for flood control during the life of the Treaty. In consequence in supporting the Protocol it has been proposed by the Government of Canada with the agreement of the Government of British Columbia that these serious servitudes which I have outlined shall be left on Canada. In this, for all practical purposes, the United States has the right to order or direct and we must obey even if our interests are thereby seriously damaged. Moreover these United States rights are enforceable as I have pointed out under the provisions of article XVI and XVIII.

In this connection the terms of the preamble to the treaty are most particularly dangerous as subordinating Canadian interest to the collective interests of the two parties in the basin which are predominantly those of the United States.

As a further aspect of the provisions in article IV (2) (a) in which 8.45 million acre feet of the Canadian storages is allocated to flood control:

In the course of the treaty negotiations I had an opportunity to advise the Canadian negotiators that when at-site power came to be installed at Mica and downstream therefrom the allocation of 15.5 million acre feet was excessive and damaging to Canadian interests out of all proportion to the benefits created downstream. I proposed that it be reduced to 12.5 million acre feet. This view was shared by some of the United States technical officers and was accepted by the negotiators, and this result is reflected in the arrangements for "cutback" set out in Annex A, paragraph 7.

A similar cutback in the 8.45 million acre feet allotted to flood control is even more important to Canadian interests.

This is 8.45 million acre feet of flood control storage under article IV (2) is made up as follows:

| Storage | Class | Million acre-feet | |
|-------------------------|-----------|----------------------|------|
| Mica Creek | primary | .08 | |
| High Arrow | " | 3.82 | |
| Duncan Lake | " | 1.27 | |
| Total primary | | | 5.17 |
| High Arrow | secondary | .28 | |
| High Arrow | natural | 3.00 | |
| sub total | | | 3.28 |
| Total committed IV (2a) | | | 8.45 |

May I mention that the primary role is defined in the International Joint Commission proceedings.

The source for the figures I have just given is the white paper, pages 144 to 148, and the report of the Senate hearings at page 54.

Mr. KINDT: Mr. Chairman, there are certain people talking in this room. I would suggest that, if they wish to talk, they should go outside. I want to hear what the speaker has to say.

The CHAIRMAN: Mr. Kindt, we have a member of this committee who is being assisted by an interpreter. I might say that it is due to the very great kindness of the member in question, Mr. Laprise, that we are not suffering the inconvenience and difficulty of consecutive interpretation, which would add greatly to the length of the proceedings. I am grateful to Mr. Laprise for the way in which he has co-operated with us.

However, I would ask members to pay attention to the remarks of Mr. Kindt; and to Mr. Kindt I would say that we have certain French speaking members who do require the services of an interpreter. It would be perfectly fair for Mr. Laprise to say, for example, that he should be furnished today with a good French translation. Unfortunately, we do not have the facilities to make that available.

Mr. BYRNE: I would like to say to Dr. Kindt that almost the same remarks could be applied to cigar smokers! However, I am not making the point.

Mr. McNAUGHTON: Thus, of the 8.45 million acre feet, without building anything, 3.00 are considered to be already in existence in High Arrow as natural channel storage, and we receive no payment for this. Of the remaining 5.45 million acre feet, 5.17 is considered to be "primary storage", and .28 is classified as "secondary".

The value of flood protection provided by the 5.17 million acre feet of primary storage is \$5.7 million per annum, based on \$1.38 per acre-foot of fully effective storage at The Dalles. The Canadian storage is 80 per cent effective. Of this amount, one half is payable to Canada. Payment for the 0.28 million acre feet and other secondary storage is based on 5.7 cents per acre foot annually—a quite trivial amount.

There is no apparent reason for committing any primary storage at Mica creek, since the 0.08 million acre feet committed could be just as easily handled by the 280,000 acre feet in High Arrow which has been assigned as secondary.

What is the reason for this incongruity? I suggest to you that there are two reasons:

1. The inclusion of a token amount of Mica storage commits Mica creek to the flood control function in controlling flows to the primary objective of 800,000 c.f.s. at The Dalles, even though it is not needed for that purpose with the structures contemplated by the treaty.

2. The inclusion of secondary storage in High Arrow subject to annual use under article IV (2) (a) establishes the principle that Canadian storage is committed to the secondary flood control objective of the United States in each and every year, and that this service has been bought and paid for by the United States in perpetuity under the payments in article VI. Moreover, this interpretation has been reaffirmed and reinforced by Clause 1 of the protocol.

Considering for the moment primary storage only, the amount which has been added by Canada is 5.17 million acre feet, and at Libby another 1.33 million acre feet making a total of 6.50 million acre feet. This is all the storage that the United States requires to meet its primary flood control objective, and it is all that the United States is prepared to pay a significant price for.

This 6.50 million acre feet could be provided easily by sequence IXa without conflict to power operations, and with a substantially higher return to Canada.

May I mention, Mr. Chairman, that the first diagram shows the sequence IXa plan worked out by the International Joint Commission.

The CHAIRMAN: Is it agreeable to the committee that all diagrams to which General McNaughton refers be published in the proceedings? Agreed.

Mr. McNAUGHTON: With regard to secondary flood control storage, for which payment to Canada is based upon only 5.7 cents per effective acre foot, I would draw attention to the amounts of this storage which came into the calculation of the payment to Canada, which is set out on page 148 of the white paper. In particular, 2.92 million acre feet of secondary storage has been assigned to Mica creek—bringing the total primary and secondary to 3.0 million acre feet at Mica.

Against this basis for our benefits, contrast our additional obligations set out in articles IV (2) (b) and IV (3) of the treaty. Under these articles, as modified by the protocol, we have committed in total all storage in Canada, whether specifically mentioned by the treaty or not “within the limits of existing facilities” as may be constructed in the 60 years from the ratification date. With respect to Mica Creek, these arrangements would have us accept a token payment based on 3 million acre feet in return for giving an ironclad commitment to operate up to 11.7 million acre feet on call, or you may find when you come to consider the sale agreement that it is possibly more on call.

Moreover, this storage can be called upon any time it is thought that flows at The Dalles might exceed 600,000 cubic feet per second assuming the use of all related storage in the United States. If the United States is content to sustain a flow of perhaps 700,000 cubic feet per second, perhaps less, then they can call upon all of our storage and use none of their own. The call for Canadian storage is based upon an assumption of the use of American storage, not upon its actual physical use.

Note that the unit value assigned to secondary is less than 1/10 that made to primary. This is because progressive control to below 800,000 c.f.s. requires exceedingly large increments of storage space. It is said that control of a flood of 1894 magnitude to 450,000 c.f.s. would require some 70 million acre-feet of storage space. Actually the ICREB studies include about 50 million acre-feet, as seen from paragraph 236 of the report. In relation to the secondary objective Canada has been indicated as the source of some 23 million acre-feet.

In the Columbia River Treaty (1961) the specification of the United States primary and secondary objectives, on which these calculations depend, nowhere appears. I think that is a most important omission. I do not believe that this has been any accidental omission but a deliberate attempt by the United States to put over a bargain in which for the capitalized sums stated in article VI (3) the United States would secure full control over the operation of all storage in Canada to any degree of flood control objective they might progressively desire

after 60 years when the limitation of 600,000 c.f.s. given in protocol 1. (1) is superseded by the word "adequately" in protocol 1. (2).

In support of this view, when you come to consider the protocol, you find in clause 1 paragraph (1) that the criteria for operations under IV (2) (b) that the U.S. secondary objective of control to 600,000 c.f.s. has become the sole objective.

In consequence in place of reducing the amount of secondary as I had proposed, by some sharp drafting the United States have acquired the use on demand during the life of the treaty of all existing Canadian facilities including the 8.45 million acre-feet towards the more extreme secondary objective.

In operations under Article IV (3), that is after 60 years from ratification, the situation under the protocol is even worse for Canada because clause 1 paragraph (2) of the protocol displaces even the secondary objective, of control of a flood of 1894 magnitude to 600,000 c.f.s. at The Dalles, by the words "adequately controlled". This means practically anything the United States may come to wish as they push out into the flood plain of the lower river.

The servitude on Canada was serious under the treaty as I have been at pains to point out and explain to Mr. Martin, and he has admitted the cogency of the warning I have given, but in the protocol he has indeed, in fact, made our position very much worse because Article IV (2) includes storage mentioned in both (a) and (b), that is all existing Canadian facilities in the Columbia river basin!

In the International Joint Commission I had advised my United States colleagues that I would most strongly recommend, on the grounds I have outlined in the foregoing, against Canada assuming any responsibility for secondary flood control at any time. Unfortunately it appears the position on which I based my conclusion does not seem to have been understood by the Canadian negotiators because in the result the small recompense for secondary seems to have been practically eliminated but the extra, and very damaging, commitment has been left in the treaty and now appears in the protocol. In fact under Article IV (2) (b) it has been arranged, I repeat, that during the life of the Treaty all Canadian storage is under call for the secondary objective, and after the treaty under Article IV (3) all Canadian storage is still on call but to such lower objective as may be deemed adequate by the United States.

May I mention that it is clear that from the United States point of view the principal objective of the United States in the current treaty negotiations has been flood control, more particularly in the lower basin of the Columbia in the Portland vicinity where a spirit of rivalry to King Canute is evident.

In this connection may I recall again that the unchanged capitalized payment for flood control provided for in the protocol is now stated in Canadian currency as 69.6 million as of 1 April 1973 (B.G.P. Table 1) with the possibility of additional payments for emergency service during the life of the treaty of \$8 million total (external affairs statement 22 January, 1964, paragraph 6 (d)).

The next two paragraphs are in my text in error. I thought, when I read them, I had full control of the documents from which these quotations were taken. But I found in checking through the manuscript last night that the documents were really for personal information and until I can communicate with the author, I am in no position to make these statements. I hope later on to be in a position to do so, when I can do so with further implications.

In my view the increased capital values consequent on extension of development should be taken into account, not as capital payments, but in the rate of remuneration for damage prevented which should be subject to review every ten years to reflect the actual values at risk. This is according to the basis established in the International Joint Commission principles.

As another measure of the value of the flood protection offered by the Canadian storages I would mention that a United States authority has stated—

and this is the army engineers speaking—that with the storages presently existing in the Columbia basin a repetition of a flood of 1894 magnitude could cause damage, in a single flood, in excess of \$350 million. The International Joint Commission report states that the much smaller flood of 1948 actually did \$100 million damage in the United States Columbia basin.

In the light of this and similar information, which was available in the International Joint Commission discussions, as I have said I informed my colleagues that I intended to advise that the United States offer of secondary should not be accepted because it was quite insignificant in relation to the possible damage of Canadian interest in at-site power.

I repeat this advice to this committee today and I recommend that Canadian flood control in article 4 (2) (a) be limited to 5.17 million acre feet except that if Sequence IXa be adopted then 1.35 million acre-feet would be added to replace Libby, making 6.52 million acre feet in all. The objective in all cases to be control to 800,000 c.f.s. at the Dalles which is the present primary objective.

Further, I recommend that the remuneration to Canada be on the basis of half the damages prevented as proposed by the International Joint Commission. This is an insurance principle and it should, as well as the exclusion of secondary storage, be applied to all three categories of flood control operation, namely article IV (2) (a) during the life of the treaty article IV (2) (b) for emergency during the treaty, and article IV (3) thereafter.

May I say that the various very serious matters which I have brought to your attention have in no wise been properly dealt with in the protocol which with the 1961 proposed treaty is under consideration today. I see nothing here that I have not already said to the Secretary of State for External Affairs in the formal correspondence between us.

I would say to you also that the issues I have mentioned are of great importance because they seriously affect the rights and proper interests of Canada and, should parliament not reject the treaty, decision in these matters will rest with the United States, supported by compulsory international jurisdiction the results of which, most improvidently, will have been accepted in advance, together with all the penalties thereby involved—and without any right of appeal.

I now turn to the actual provisions of the protocol itself.

The Protocol

I recommend that you look at this in your copies of the protocol.

Clause 1 of the protocol makes reference to article IV (2) (b) and article IV (3) of the treaty. Article IV (2) (b) relates to calls for additional flood protection during the life of the treaty and article IV (3) relates to all calls subsequent to 60 years after ratification. The calls include amounts of storage allocated to protection in the primary objective of control of a flood of 1894 magnitude to 800,000 c.f.s. at The Dalles and also of such a flood to the secondary objective of 600,000 c.f.s.

For the reasons I have given in the first part of this presentation the United States invitation to participate in the secondary objective should be rejected.

Under paragraph 1 of the protocol the United States would then be entitled to call on Canada for the operation of 5.17 million acre feet (or 6.52 million acre feet if Libby is not built) together with any additional existing facilities to meet the primary objective of control to 800,000 c.f.s.

The total storage then available to the United States to meet the primary objective will include, in addition to the Canadian storage mentioned above, all related storage in the United States existing and under construction in January 1961; also Libby if built by the United States.

"Related" is an indefinite term and the storages in question should be defined by location and capacity; also as additional United States storage becomes available this should be employed before additional Canadian storage is committed. Otherwise the burden of flood protection which should properly be incident on United States facilities will be shifted to Canadian.

From the United States point of view the real cost of the use of Canadian storage under the treaty will be a fraction of the consequential costs of United States storage in lieu.

Protocol clause 1 paragraph 2 relates to flood protection subsequent to 60 years after the ratification date.

It provides that "the United States entity will call upon Canada to operate storage under Article IV (3) of the treaty only to control potential floods in the United States that could not be adequately controlled by all the related storage facilities in the United States".

This phraseology indicates the magnitude of the flood being considered but it does not instruct precisely that all or any of the related storages in the United States are to be operated before Canada is called on to operate Canadian storage.

Moreover, certainly no limitation in the use of existing Canadian storage is made in the proviso "but in no event shall Canada be required to provide any greater degree of flood control under article IV(3) of the treaty than that provided under article IV (2)".

Article IV (2) includes (a) 8.45 million acre feet and (b) any additional storage in the Columbia river basin in Canada within the limits of existing capacities. That is in this provision, all existing storage in Canada is made available for call.

It would appear therefore that the United States is free to evade the operation of their own storages and to throw the burden on Canada.

May I repeat the first part of this paragraph merely states if the flood control requirement is greater than the United States capacity to meet it the United States can call on Canada, but it does not say that all or any of the United States storage is to be used either before or even along with Canadian storage.

Again related storage should be specified so as to ensure that none is left out.

Adequately controlled is indefinite and should be defined as the objective of control of a flood—any flood—to 800,000 c.f.s. at The Dalles.

Adequately, if not defined, might even be construed to permit the progressively greater control which the United States secured under the treaty so as to facilitate the invasion of the flood plain of the lower river, with a mounting responsibility for their protection if they do so.

I was responsible for originating the concept of Canada providing flood control to help the United States in the event of the forecast onset of a flood of exceptional magnitude.

This is a service of immense value and I would support a provision on the lines of International Joint Commission flood control Principle No. 6, which has been eliminated from the treaty by the negotiations, with an additional clause to prevent abuse by imposing a specific minimum charge per acre-foot called for; also the provision that Canadian storage is not available until after all storage in the United States has been committed.

Moreover, I would provide that Canada will not concern herself with any United States objective to achieve control of any flood to a lower flow than the present primary United States objective of 800,000 c.f.s. at The Dalles, Oregon.

Also, that refill of storage evacuated for flood control is exclusively a matter for Canadian decision; after consultation with the United States if you will.

The concept of referring to the permanent engineering board flood control requests made by the United States which may seem onerous to Canada is an attempt to bring public opinion to bear on the United States to moderate excessive demands at a time when very likely there will be acute anxiety in the United States. Even if the United States demands are in fact excessive, is it wise for Canada to press such opinions in such circumstances? Anyway if the United States continue to press the request, it must be honoured by Canada. That is, control of what is to be done continues to rest, as in the Columbia River Treaty, with the United States.

What happens if this situation becomes a habit under the stress of anxiety created by those citizens of the United States who have invaded the flood plain of the lower Columbia? I predict that Canadian interests will continue to be submerged—and increasingly forever. For there is no escape once this treaty has been ratified by this parliament—the protocol gives Canada no real help whatever.

On the other hand, if Canada should press for reduction in United States demands and this is agreed, whether by the permanent engineering board or otherwise, and then the actual flood control, perhaps by a change of meteorological conditions, is found to be insufficient and large damage results, then Canada, I am sure you will agree, will be in a very invidious position.

I do not think we should be required to expose Canada to such an unfortunate situation. I think the treaty should provide that the United States should be responsible for any request which they make but that the terms should be such as to constitute, consequently, a real deterrent to abuse, not necessarily wilful abuse, but to demands promoted by United States public anxiety which have become extravagant.

In saying what I have said to you now, these all were matters which were said and argued out—said with the United States member on the International Joint Commission—and were all regarded as very reasonable and proper.

Mr. HERRIDGE: At what time was that?

The CHAIRMAN: Could we leave the questions until the conclusion?

Mr. McNAUGHTON: I suggest that all this might be achieved by the acceptance of International Joint Commission flood control principle No. 6 with the added provision as "the deterrent to abuse" that the United States would make a minimum payment for whatever evacuation it may deem wise to ask for at a fixed rate per million acre feet, predetermined beforehand, substantially equivalent to one half the damages to be expected in the forecast flood above the primary objective of control to 800,000 c.f.s. Then if half the actual damages determined after the event are greater than this, the matter will be settled by the United States making a supplementary payment to Canada of the difference.

Under this proposal the United States would have full responsibility for calling for the evacuation they determine to be required. They will need to balance the cost against the protection asked for and to take full responsibility whether it will suffice or not.

They do not need to call for any protection at all unless they wish; and are entirely free to develop other storages in the United States to fulfil their special demands, as indeed they should. Actually this is a very equitable approach based strictly on actuarial principles of insurance, except that the United States is favoured by having the opportunity, in the light of the latest meteorological forecasts, of assessing the risk and then calling for the remedial action they then deem appropriate.

These are the considerations I put before my United States colleagues in the International Joint Commission and they brought surprised acceptance. This was later among the matters upset in the negotiators' discussions when Canada was found by their associates to be in the very difficult position of a country divided against itself.

I do not blame the United States negotiators for taking advantage of our unfortunate position, but I do think they were most unwise in the interest of their own country to build up a real ground for bitterness when our people awoke to what had been done to their rights.

Protocol Clause 2

This clause provides that every effort will be made to minimize flood damage "both in Canada and the United States" under article IV(2)(b) and article IV(3). It includes any storage in the Columbia river basin in Canada. That is article IV(2)(a) 8.45 million acre feet as well as any additional storage.

Article IV(2)(b) deals with additional flood control during the period to 60 years from ratification. The recompense to Canada is \$1,875,000 for each of the first four calls.

Article IV(3) deals with all flood control after 60 years from ratification.

There is no remuneration to Canada for this service.

Not mentioned in the protocol is article IV(2)(a) providing for the operation of 8.45 million acre feet, the remuneration for which is presumably included in the sums stated in article VI(1) but without any specification of the basis of the service to be rendered for these payments.

In no case is specific mention made in the treaty that flood control operations should be so conducted that flood damage in Canada would be minimized. This would be assumed from a good neighbour and it is implied by article XVIII(3), but it is preferable to have a specific authoritative interpretation to this effect in all cases.

The protocol should therefore include article IV(2)(a) as well as article IV(2)(b) and article IV(3) mentioned. Not to do so would be to make an invidious distinction which might be interpreted that under article IV(2)(a) and article VI(1) the complete service desired by the United States had been bought and paid for and that the United States were therefore under no obligation in respect to these normal operations to minimize damage in Canada if any disadvantage would result in the United States. It should be noted that under article VIII(2) Canada would not be able to collect any damages.

Protocol clause 3 re exchange of notes under article VIII(1): I will defer comment on this document until later.

Protocol clause 4: Suspension of article X(1) of the treaty—"east-west standby transmission":

The provisions in paragraph (1) and (2) are consequential on the sales agreement and are necessary to insure that there would be no liability on Canada asserted in the event of the purchase back by Canada of some portion of the downstream benefits for delivery other than at Oliver.

It is to be noted that on the conclusion of the 30-year sale period article X of the treaty will again be in effect whether Canada wishes delivery at Oliver or not, and irrespective of whether the then existing development of the Canadian transmission system requires such assistance or not.

I recall that Montreal Engineering Company reported to the government of Canada that this service was not necessary in any event. (Letter 1 March 1963 in reply to letter 20 February 1963 from J. D. McLeod for T. M. Patterson criticizing the company for providing an opening for a critic by name McNaughton).

Article X of the treaty should be rejected for the reasons I have given in part 1 of this presentation.

It never should have been included in any treaty under any event.

At the very least this article should be restricted to facilities in dependable capacity which might be specifically requested by Canada. However it would seem that such a provision would be beyond the competence of protocol. In this connection see United States Senate committee hearings, 8 March 1961,

statement of secretary Udall, page 25, that this arrangement about balances the cost to the United States of transmission of the Canadian entitlement in downstream benefits to the boundary, a service to which Canada is entitled under the International Joint Commission principles.

Protocol clause 5. Benefits from Libby reservoir to power production on the West Kootenay in Canada.

It is asserted that control of historic streamflows of the Kootenay river by Libby "would result in more than 200 MWYears per annum of energy benefit downstream in Canada" as well as important flood control protection to Canada.

I invite attention to the fact that the term "energy benefit" is used; it is not energy benefit we want, but firm power.

This statement is not true unless Libby is operated in release and refill to provide such benefits. This is undoubtedly of great concern to Canada.

However Article XIV (2) (a) quoted in this clause of the protocol merely states that the powers and duties of the entities include "(a) coordination of plans and interchange of information". Not a word even purporting to endow the board with executive authority to order the entities.

Moreover Article XIV (2) (k), which is quoted in subsequent clauses of the protocol, defines the duties of the entities as "preparation and implementation of detailed operating plans—and, mark these words—that may produce results more advantageous to both countries than those that would arise from operation under the plans referred to in annexes A and B".

This means that a modification which would in any way reduce benefits, under the treaty, to either party is not within the competence of the entities. The consequence is that the entities are unable to implement this amiable concept of "pie in the sky".

The protocol goes on to state that the entities shall—and, mark these words, which are in the imperative—pursuant to this article cooperate on a continuing basis to coordinate the operation of the dam with the operation of the hydroelectric plants on the Kootenay river and elsewhere in Canada, that is in "plans and exchange of information". This is stated specifically to be in accordance with Article XII (5) of the Treaty.

I would ask you to pay attention to the wording of article XII (5).

Article XII (5) provides that if a variation is desired by Canada the United States will consider and "if the United States determines that the variation would not be to its disadvantage it shall vary the operation accordingly".

There is no assurance whatever in this for Canada and every likelihood that in the operation of Libby the United States will follow both in "release" of flow and in "refill" the pattern now in effect on the Pend d'Oreille for maximizing system benefits in the United States and under which the firm power output of Waneta is cut to one unit out of four in the late summer.

The protocol, I am sorry to say, therefore, adds nothing to Canada's rights on the Kootenay. Indeed, in mentioning the large benefits which might be produced by Libby regulation and then continuing to make this regulation, as in the treaty, subject to no disadvantage to the United States, the possibility of complaint by Canada is foreclosed specifically because we admit the condition to which we are to be subject.

Protocol clause 6 paragraph (1) is merely a restatement of the right of the parties to divert water for consumptive use. Like the treaty, it does not authorize diversion for a multipurpose use which is the use in which we will be particularly concerned.

Paragraph (2) resolves a doubt in meaning as to whether the several diversions authorized by the treaty would continue after the period specified. It is useful as clearing up this ambiguity in the treaty drafting.

It is noted that even with this clarification the treaty assumes to terminate Canada's right to commence a diversion 100 years after ratification. It thus purports to legislate for matters of some importance after it expires and at a time when under other clauses the rights of Canada "to jurisdiction and control" under article II of the boundary waters treaty have presumably been restored.

This is very objectionable indeed.

Protocol clause 7 states: "As contemplated by article IV (1) Canada shall operate the Canadian storage in accordance with Annex A and hydroelectric operating plans made thereunder. Also, as contemplated by annexes A and B and article XIV (2) (k) these operating plans before they are agreed to by the entities will be conditioned as follows:—"

"Contemplated" is an inadequate expression of the right to order the operation of the Canadian storage which is vested in the United States by the treaty in article IV (1) and annex A paragraphs 5, 6, 7 and 8. This is a specific right of great and far reaching value to the United States which it is not thought could be varied by protocol by "conditioning" annexes A and B and also article XIV (k) which, as it stands, authorizes the entities to vary the operating plans determined by the criteria of system optimization in annex A paragraph 7 only if the change would produce results more advantageous for both countries.

However, with this reservation, it is of interest to examine the "conditioning" proposed in the protocol.

Protocol clause 7 (1) reads "As the downstream benefits credited to the Canadian storage decrease with time, the storage required to be operated by Canada pursuant to paragraphs 6 and 9 of annex A will be that required to produce those benefits".

Note that the reference is to Canadian storage and is not restricted to the 15.5 million acre-feet of Canadian storage named in article II.

Annex A paragraph 6 requires that the 15.5 million acre-feet of Canadian storage be operated to achieve optimum power generation downstream in the United States until the problem is solved at Mica.

Annex A paragraph 9 provides "the entities will agree on operating plans and the resulting downstream benefits for each year . . . etc."

It is evident that this provision is procedural only and subject to Annex A paragraph 6 until generation is installed at Mica when it becomes subject to Annex A paragraphs 7 and 8.

Note further that the Canadian "entitlement" is not the half share of the actual benefits to United States power downstream delivered at the boundary as proposed in the International Joint Committee Principles, but a figure arrived at by applying the formulae for deductions given in Annex B paragraph 3.

The result is progressively increasing deductions depending on actions which it is open to the United States to take.

Protocol clause 7 (1) as it stands might mean therefore that additional Canadian storage would require to be operated to maintain the level of Canadian downstream benefits sold on contract for 30 years.

It is a physical fact that as the amount of storage operated is increased the incremental benefits decrease. Under the conditions of 1970, for example, at the base level of 13.0 million acre-feet, the incremental value per million acre-feet of storage is about 200 million watts. At a level of $13.0 + 15.5 = 28.5$ million acre-feet the incremental value per million acre-feet has fallen to about 50 million watts.

In consequence if a deficiency on the operation of the 15.5 million acre-feet develops in order to make up a small shortage of power a very large amount of additional storage will be required.

It is most important therefore that the contract for sale should not commit Canada to deliver amounts of power benefits in excess of those which will be available from the Canadian storage of 15.5 million acre-feet.

Protocol clause 7 paragraph (2) provides for interchangeability between the three Canadian storages at the discretion of the Canadian entity. It is helpful to the convenience of operation of the Canadian storages and it would permit for example at-site generation at Mica for the Canadian load to be protected to some extent by the operation of High Arrow storage for re-regulation within the limits of available storage to suit the United States load. However this flexibility is strictly limited by the fact that Canada must provide regulation at the boundary equal to the total of the 15.5 million acre-feet of Canadian storage operated in accord with the criteria in Annex A paragraph 7. This view is confirmed by the last sentence of Protocol clause 7 paragraph (2),

The manner of operation which will achieve the specific storage or release of storage called for in a hydroelectric operating plan consistent with optimum storage use will be at the discretion of the Canadian entity.

There is not much freedom there.

Further, it must be recalled that with High Arrow regulated for the United States load the at-site generation at Murphy will consequently be phased for the United States and not for the Canadian load.

In consequence it is very necessary that studies should be made available to establish what actually can be achieved for the United States load by High Arrow re-regulation of Mica when Mica is operated for the Canadian load.

It seems evident that these studies will show that this proposal is far short of requirements.

It would seem therefore that it would be preferable, and more equitable to both parties, to follow the arrangement I have indicated in the Canadian Institute of International affairs article, spring 1963, to base Canadian rights on "best use of Canadian flows for the Canadian load and adapt the flows and deliveries through an interconnection agreement in which Canada would be compensated for any concession made and the net overall benefit to the system would be equally divided." This is the customary practice between utilities.

Studies of Mica and High Arrow operated to this criteria should also be made available.

I suggest these studies and the ones to the present criteria in annex A (7) should be carried out for 1970, 1985 and 1990 forecast load and power supply conditions.

I think this committee should see the results of these studies before any further recommendations are made in respect of this matter.

Protocol Clause 7 (3): It is noted that if the West Kootenay is coordinated with Mica, etc., in the Canadian system that this provision will include West Kootenay production in the total on which optimum benefits are determined.

It would seem that much more has been added in the United States so the relative weight of Canadian interest in determining optimum system operation is lessened.

It would seem that renewed consideration should be given to the instructions by the governments of the United States and Canada under date of 28 and 29 January 1959 respectively that the consideration should relate "to benefits which will result from the cooperative use of storage of waters and electrical interconnection within the Columbia River system".

Then we would have a precise system and a lot of these problems would disappear.

Protocol Clause 8: This clause substitutes the extension of modified flows for the 30-year period beginning July 1928 for the modified flows for the 20-year period beginning the same date specified in annex B paragraph 6 as the basis for the calculation of downstream benefits.

At my request I was furnished with a copy of the United States publication. I made a further request that details be worked out to give us the average annual flows along that area with other information. In due course I received a photostatic print containing that information. I do not know who sent it to me. I acknowledged receipt but it was not very intelligible because it was almost illegible.

Also at the suggestion of the Department of External Affairs I wrote to the Bonneville power administration asking for further information on the subject but, as I expected, I had no reply from that source.

I continue in my statement with a table giving information which has been given to me showing that from the 20 to 30 year period the Kootenay at Libby is increased by about six per cent and the Kootenay lake inflows by about six per cent. In respect of the Pend d'Oreille at the border the flows have gone up by ten per cent, but in respect of Mica and Arrow there is practically no change. There is a very substantial change in flows in the lower Columbia down below The Dalles to the extent of some nine per cent.

It appears that the average annual flows at representative sites in the respective periods are about as follows:

| River | Sites | Average Annual Flow in 100 c.f.s. | | Increase Per Cent |
|----------------|----------|-----------------------------------|----------------|----------------------|
| | | 20-Year Period | 30-Year Period | |
| Kootenay | Libby | 10.3 | 11.0 | + 6 |
| | K. Lake | 25.6 | 27.1 | + 6 |
| Pend d'Oreille | Boundary | 24.8 | 27.2 | +10 |
| Columbia | Mica | 20.1 | 20.1 | ± |
| | Arrow | 38.5 | 38.9 | ± |
| | Dalles | 162.6 | 175.0 | + 9 |

This result will add slightly to Canadian at-site generation on the West Kootenay and at Waneta and to the United States generation slightly at Libby and substantially on the lower Columbia.

I think the observation can be made that the greater flows on the United States Columbia call for greater use of Canadian storage and results in an increase in the Canadian share of downstream benefits estimated in the Back-ground Paper, paragraph 8, "at some 500 x 10⁶ KWH or 14 to 18 per cent annually".

The adoption of the 30-year period accords with the principle that the best statistical information should be used.

Clause 9 (1): The specification of PNW area load shape in both steps II and III would not materially alter the difference.

Protocol Clause (9) (2). This repeats the instruction in annex B paragraph (2) which reduces the Canadian capacity credit to that for "firm load" instead of the very much larger contribution which is achieved in the actual operation.

It was specifically provided for in the International Joint Commission Principles that when the load conditions in the Pacific northwest should change capacity credits would become valuable and energy benefits would become less important.

Since the Canadian requirement for downstream benefits for many decades will be for "firm power" there is no objection to this for the calculation of downstream benefits.

There is an obvious difficulty which occurs although it is not appreciated by a lot of people, however in the actual operation for system benefits the

phasing of the releases will largely be determined by the United States load and this being out of phase and having a different load shape from the Canadian load represents a very serious loss to Canadian at-site generation.

This should be corrected by changing the criteria in Annex A and adjusting the result to satisfy United States needs by an interconnection agreement in which Canada would be compensated for losses in meeting United States desires and by sharing equally the benefits; also with exchange of capacity and energy as provided in International Joint Commission principles.

Protocol Clause 10: It is only equitable that pumping power be included at Grand coulee. I always understood it was. It was a surprise to me to find it had been omitted.

Protocol Clause 11: Adjustment of flood control benefit payments for longer period of operation is equitable.

Protocol Clause 12: The assertion is made that "the treaty does not establish any general principle or precedent applicable to waters other than those of the Columbia river basin and does not detract from the application of the Boundary Waters Treaty of 1909 to other waters".

This pronouncement lacks foundation in practice and experience. See United States Senate committee hearing, 8 March 1961, pages 38 and 40, evidence of Kearney of the state department and of White who was the legal member of the United States negotiators.

It is to be noted that for the last decade the United States have consistently sought at international conferences related to water in transboundary rivers, from Dubrovnik onward, to outmode Article II of the Boundary Waters Treaty except that where this principle was of particular advantage to the United States, as on the Pend d'Oreille, it has been asserted with the utmost determination, making use of other clauses of the Boundary Waters Treaty as appropriate to reinforce their claim.

III Comment on "Attachment relating to terms of sale" entered into by notes dated 22 January 1964 made pursuant to Article VIII of the treaty (1961) and Clause 3 of the protocol (1964)

The clauses of the "Attachment" which have particular significance in relation to the operation of the Canadian storages or to the remuneration to Canada for the Canadian entitlement to a half share of the downstream benefits which is to be sold by Canada to the United States for a period of 30 years are:—

Clause A. 1. (c) provides... if storage "not fully operative in accordance with the schedule" and "any detailed operating plan agreed upon in accordance with Article XIV (2) (k) ... and the Canadian entitlement is thereby reduced, the British Columbia Hydro and Power Authority shall pay the purchaser an amount equal to the cost it would have to incur to replace that part of the reduction... the vendees of the purchaser could have used other than costs that could have been avoided... Alternatively, the British Columbia Hydro and Power Authority may, at its option, supply power... which assures that the purchaser receives the capacity and energy... with appropriate adjustments to reflect transmission costs in the United States of America, delivery to be made when the loss of power would otherwise have occurred".

"The United States entity" before purchasing "more costly power from any third party" shall use "any available surplus capacity or energy from the United States federal Columbia river system... as then applicable".

"disagreement" subject to "arbitration... of actual loss incurred".

Comment

These provisions seem reasonable in a sale agreement, but nevertheless any delay in commencement of operation could be very costly to Canada.

Clause A. 4. provides that

If, during the period of the sale, there is any reduction in Canada's entitlement to downstream power benefits which results from action... pursuant to... Annex A (7)" (the arrangement for cutback of up to 3.0 million acre-feet in the 15.5 million acre-feet of storage under Article II to be operated for power when generation comes to be installed at Mica or downstream therefrom) the British Columbia Hydro and Power Authority "shall, by supplying power to the purchaser, or otherwise as may be agreed, offset that reduction in a manner so that the purchaser will be compensated therefor.

Comment

By this clause the protocol confirms that the United States has the right to the full Canadian entitlement to downstream power benefits which would derive from the full continued operation of the 15.5 million acre feet of the Canadian storage during the 30-year term of sale or if the reduction, recognized in the treaty (1961) to be required for the effective operation of Canadian generation when installed, is made then the United States is to be compensated therefor. In other words, this clause makes it even more difficult to bring Mica in due course into effective and efficient operation.

Clause B.1. provides:—

... hydro electric operating plans ... shall take into account generating requirements at-site and downstream in Canada and the United States to meet loads.

I confess I do not understand this provision.

Note this criteria differs from the criteria in annex A paragraph 6 which requires operating plan designed "to achieve optimum power generation in the United States" and in annex A paragraph 7 "optimum power generation at-site in Canada and downstream in Canada and the United States of America.

Comment

However at the time of initial filling of the reservoirs there will be no at-site generation in Canada except on the West Kootenay. These plants are affected by filling of Duncan so this arrangement may be of some benefit to Canada.

Clause B.1. provides also that

the dam mentioned in article II(2)(a) [Mica] shall be full to 15.0 million acre feet by September 1, 1975.

Why is this so when Mica is to be operated only to 7.0 million acre feet?

Is this a notification that Mica has 15.0 million acre feet capacity which may be called upon in flood control operation under article IV(2)(b) or IV(3)?

Clause B.2.

In event of a breach of the obligation under article IV(6) of the treaty compensation to the United States under article IV(6) shall be "an amount equal to 2.70 mils per kilowatt hours and 46 cents per kilowatt of dependable capacity for each month ... in lieu of the power which would have been

forfeited under article XVIII(5)(a)". These rates are about right for a modern, highly efficient plant, and I think they are quite reasonable.

Alternatively Canada has the opportunity to supply energy and capacity together with the appropriate adjustments to reflect transmission costs in the United States delivery to be made when the loss would otherwise have occurred.

Note: This would seem an idle privilege, for, except on the West Kootenay there will be no generation in Canada or transmission lines to the boundary at the time when the Canadian storages are first being filled.

Clause B.3 states that a diminution of benefits attributable to a failure to comply with paragraph A.1(a), which is a schedule for commencement of operation of the Canadian storages, or A.2, which deals with maintenance and operation of the treaty storages in accordance with the treaty, shall constitute "a breach of the treaty by Canada". Article XVIII(5) provides for a penalty by forfeiture of downstream benefits for an equivalent period to the interruption, and the exculpatory provisions of article XVIII—that is, freeing from blame—do not apply.

It would seem that Canada would then be subject to an unlimited liability for any resulting "injury, damage or loss", as provided by article XVIII(2), except that compensation or replacement of power as specified in paragraph A.1(c) by Canada shall be accepted by the United States as complete satisfaction.

Article XVIII of the 1961 treaty limited the obligation of Canada, (a) for delay in the commencement of full operation to forfeiture of benefits for an additional period equivalent to the delay, and (b) for any other breach causing loss of power benefits to the loss of revenue from the sale of the power. I have always had some anxiety over the word "revenue". Is it revenue at wholesale rates or is it revenue at retail rates? There is a vast difference, a difference running into scores of millions of dollars.

It would seem that under the provisions of the "sale" that failure to complete the Canadian dams on schedule and to continue their operation for any reason, culpable or not, will involve Canada in serious and continuing penalties far beyond those imposed by article XVIII of the 1961 treaty.

According to the proposals made by British Columbia, High Arrow dam is to be built at a site where rock for foundations is available for a small part only of the length of the dam and for the major part it will rest on permeable gravel a thousand feet or more in depth.

The stability and safety of such a structure under design flood conditions gives reason for anxiety. What responsibility will Canada bear if such a catastrophe should occur? We have not even had a direct report on these matters from consultants who are responsible to Canada; and there is no indication that we will ever have one.

Section B, paragraph 3 speaks of failure to provide the power benefit sold or to pay the compensation in lieu thereof as constituting a breach of the treaty by Canada—and I emphasize the words "by Canada". It does not mention that destruction of the dam, either by act of God or failure owing to improper design, would be exculpatory; and so the payments for damages either in power or in United States funds at the valuations specified would run on until the works were replaced.

This might prove to be a very long time. The question of the prudence or propriety of Canada accepting or permitting a province to undertake such an unlimited commitment is a matter of very serious concern to the parliament of Canada.

In the report of October 19, 1961, High Arrow is credited with 484 megawatt benefit. At the wholesale rates—if they are wholesale rates—specified at 73.2

per cent load factor this would involve a cost to Canada of 484,000 times \$22.9 or \$11.0 million per year of interruption. Note that at retail rates—which are not applicable—the cost will be several times greater. Note also that there is no provision for limiting or terminating the payments if prolonged difficulties are encountered in construction or repair.

Clause B.4 provides that for any year in which Canada's entitlement to downstream power benefits is sold in the United States, the United States entity may decide the amount of the downstream power benefits for purposes connected with the disposition thereof in the United States.

It is evident that the actual downstream power benefits in the United States may considerably exceed those calculated under the treaty articles IV, V and VII, and annex A and annex B; and also in the arrangements for implementation—article XIV more particularly.

For example the negotiators' report of October 19, 1961, shows the benefits in 1970 from the three Canadian storages as 1,142 megawatts per year in the United States as compared with Canada, 763 megawatts per year, a difference of 379 megawatts.

During the negotiations the United States asserted and maintained the right to withdraw saleable secondary and to firm it with Canadian storage for their own account. The Canadian negotiators in order to make the division appear nearer to a 50/50 sharing made a different explanation.

On other points also once a bargain is struck for the sale of all—and I underline the word "all"—Canadian benefits these differences become meaningless because the United States is in full control of the determination and allocation of benefits to power of every sort.

It is very probable that the total benefits secured by the United States may considerably exceed in amount and in value the allocation on which the quantities in the Canadian entitlement have been based.

Once the treaty and protocol have been ratified there is nothing which can be done because the Canadian entitlement under article V is not the half share of the downstream benefits of whatever sort proposed in the International Joint Commission principles, but the much smaller amount determined under article VII which brings in annex B and the arbitrary deductions in annex B, paragraph 3. Similarly in respect to at site generation, the contribution to the Canadian load is not that produced by a best use of storage for Canada but the much smaller amount when outflows from the Canadian storages are regulated by the criteria in annex A designed to achieve optimum power generation in the system.

Mr. Chairman, the foregoing, including the articles in the *International Journal* and the observations which I have in my correspondence with Mr. Martin—which is all consistent with what I have said to you here today—express the opinions, the doubts and the anxieties which I have formed on the matters discussed as a result of the studies I have made of the Columbia River Treaty, the protocol and the sales agreement.

In the other papers I have drawn attention—very comprehensively, I think—to the difficulties which I and others have found and the dangers which we feel exist. I hope to be able to answer any questions any member might wish to ask me.

Furthermore, I would like to say what I have already said to the Secretary of State for External Affairs, that after the most careful consideration of the protocol, I do not believe it has added anything to the treaty which was made before in regard to security and advantage to Canada. The difficulties present in the treaty of 1961 are still present and, in some cases, they are present in exaggerated form.

Mr. BYRNE: We have agreed that the diagrams will form part of the submission and appear in the record.

The CHAIRMAN: We have agreed that all diagrams to which the general has referred will be published in our proceedings.

Mr. BYRNE: Some confusion may be caused if these maps appear in the record in the form in which they appear here, particularly in respect of the "Canada plan" and the "treaty plan". I believe these will give rise to some wrong conclusions.

The "Canada plan" may be a plan which may be presented by the government. Would that not more appropriately be called sequence IXa or the "McNaughton plan"?

The CHAIRMAN: General McNaughton, can you answer that?

Mr. McNAUGHTON: I will be very glad to answer Mr. Byrne.

A rose by any other name will smell as sweet. I have no objection to any name you care to give it as long as it is identified with the plan I have been proposing and supporting—a plan which even the severest critics and the strongest supporters of the treaty recognize as giving the maximum power.

Mr. BYRNE: It could, then, more appropriately be named the "McNaughton plan" could it not?

Mr. McNAUGHTON: I feel complimented, Mr. Byrne.

Mr. BYRNE: Who was the artist who made the diagrams?

Mr. McNAUGHTON: What we have brought out here is the initial plan supported by Mr. Fulton and by everyone.

Mr. BYRNE: But that is not my question, general. My question was simply: who designed the plan? Who was the artist?

Mr. McNAUGHTON: The plans were made by *Engineering and Contract Record* at my request.

Mr. BYRNE: I would like to take a look at the so-called "Canada plan", and in particular at Arrow lakes.

The water surface at the present time would be something in the neighbourhood of 102,270 acres. The reservoir contemplated would be 129,270 acres, which means that there would be a flood area of some 27,000 acres, which is about a quarter of the existing lake. Would you not agree, then, that on the so-called "treaty plan" there is a slight exaggeration in the size of the flood area?

Mr. McNAUGHTON: No, Mr. Byrne, there is not an exaggeration. Surely you will agree that the lake is part of the reservoir area. The actual area which you are putting under flowage, and which you are putting to very serious disadvantage by this 46 feet up and down, includes the lake. The total is 130,000 acres approximately, which is substantially in proportion to what was done by the draughtsman.

Mr. BYRNE: It is only 27,000 acres more than is shown on the Canada plan map. In looking at the two, would one not draw the conclusion that the one on the treaty plan was slightly exaggerated in area?

Mr. McNAUGHTON: Let me assure you that it is not exaggerated, because I had this thing checked, and it is approximately correct.

Mr. BYRNE: This one must be smaller than the other appears to be.

Mr. McNAUGHTON: The Bull river-Luxor has 97,000 acres in it, while Dorr has 17,000. There is one slight error in the drafting, and that is the location of Dorr. No, I see it has been corrected. Dorr is below the confluence of the Elk and the Bull with the Kootenay. It is all right.

Mr. DAVIS: I think the actual increase in the area resulting from the flooding of the Arrow lakes is in the order of 25 per cent. If one runs a planimeter around the Arrow lakes, would one not get an increase of between 200

and 300 per cent? I think Mr. Byrne is suggesting that the maps as reproduced in the record would give a wrong visual impression of the amount of flooding.

Mr. TURNER: Might I suggest to the committee that these diagrams included in the appendices for this committee are not drawn to scale because on the basis of evidence we have received the so called Canada plan results in the flooding of 86,600 acres, while the treaty plan results in the flooding of 27,000 acres. That certainly is not reflected in the blue colour of the flooding areas on these two charts. Are these drawn to scale?

Mr. McNAUGHTON: They are not intended to be drawn to scale. No. They are just sketches.

The CHAIRMAN: The general indicates that they are just sketches? Is that correct?

Mr. RYAN: Could the committee request that these diagrams be marked in the committee proceedings as being not drawn to scale?

Mr. McNAUGHTON: We would be glad to have them checked and redrawn if necessary.

The CHAIRMAN: Is that agreed?

Mr. BYRNE: I think it would be well to do so. I am confused.

Mr. TURNER: If these diagrams are to be included in the committee proceedings, I would like them to be marked and to say that they are not drawn to scale.

Mr. BYRNE: The suggestion is that they be redrafted to scale. I think that would be better.

Mr. DAVIS: I think it would be preferable if they were redrawn to scale.

The CHAIRMAN: Is that agreeable to you?

Mr. TURNER: That is agreeable to me, if it is understood that these diagrams as set out be not included in the brief.

Mr. DAVIS: One of the principal features of the McNaughton plan is that there will be no Libby project, and that the upper Kootenay waters would be diverted through the mountain trench into the upper Columbia. We have heard evidence to the effect that under the McNaughton plan the order of flooding would be twice as much as the order of flooding under the treaty plan. Would you care to comment on the extent of flooding in Canada as between the two plans?

The CHAIRMAN: Perhaps it would be useful for the record if we indicated therein that General McNaughton is being assisted by Larratt Higgins, and James Ripley.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Could we have an identification of these assistants, and be told what their positions are?

The CHAIRMAN: Perhaps while the general is getting this material ready, Mr. Higgins would be good enough to indicate for us his own qualifications.

Mr. LARRATT HIGGINS: (*Economist, The Hydro Electric Power Commission of Ontario*): Mr. Chairman and members of the committee, I am here, as you have read, today in an individual capacity. I have been interested in the Columbia treaty for a number of years, stemming from my association with General McNaughton and with other members of the government in 1958.

The CHAIRMAN: I think the question was about your qualifications, Mr. Higgins.

Mr. HIGGINS: I am an economist. I hold degrees from the University of Toronto, and Cambridge University in England. I have worked in the electrical utilities field for about ten years, and I have, during the course of that

work, and during my time in Ottawa, been exposed to problems of operating under international water treaties. This accounts for both my interest and my qualifications.

The CHAIRMAN: Now what about your colleague?

Mr. JAMES RIPLEY (*Editor, Engineering and Contract Record Magazine*): I am a registered professional engineer of the province of Quebec and I am a graduate of McGill University and Harvard University, and I am a member of the Engineering Institute of Canada. My present position is that of editor of *Engineering and Contract Record Magazine*, and I have been in this capacity through the past three years. I have conducted a study of the Columbia river problem and published one report of it. A second part of that report will be published later on this month.

The CHAIRMAN: Thank you.

Mr. TURNER: Since your graduation and your assumption of the duty of editor, what did you do professionally?

Mr. RIPLEY: Mainly construction work; I have been involved in construction in connection with the Rideau canal waterway operation, and part of my work at Harvard was to make some economic studies of the St. Lawrence Seaway. Immediately prior to this job I worked for McGraw-Hill in New York in a similar role studying the implication of large construction projects on the American economy, and I have performed similar functions for *Engineering and Contract Record Magazine*.

The CHAIRMAN: Thank you. Now, General McNaughton.

Mr. LEBOE: Maybe we could decide when we shall meet again, Mr. Chairman.

The CHAIRMAN: We have a notice which has been distributed pursuant to the announcement made some days ago that we would be meeting tomorrow at ten o'clock unless the committee has any other recommendations in respect of this evening.

Mr. McNAUGHTON: In storages and water calculations we are concerned with the water surface areas, and those are the figures I have here. Under the treaty the water surface area in the reservoirs would be 147,600 acres; and under sequence IXa the water surface area would be 114,000 acres; and the reason why the storage is substantially the same in both the treaty and IXa sequence is that the depth of the flowage in the valleys is very much deeper.

Mr. DAVIS: We have heard evidence to the effect that additional acreage of flooding under the treaty project is less than half of the flooding which would occur under the sequence IXa.

Mr. McNAUGHTON: I think that would be just about the figure. From the information I had when I made a careful study of it when I was in the International Joint Commission I am satisfied that the disadvantageous impact on Canada through the use of the High Arrow, for example, has many times the disadvantages of the use of storages in the sequence IXa plan. The reason for this of course, it seems to me, is that when you go to an extra elevation of 46 feet under the treaty plan—and I have said this to the committee on previous occasions—what you do is to extinguish civilization in the whole area, because there is no place in the vicinity for the people to go.

There is no place in the vicinity for the people to go; they have to be moved away. These communities have been there for a very long time; it is a very old and settled part of the country. These communities are to be broken up. I admit in the short term view there is a plausible case which has been made to the effect that these people might be made to suffer for the greater good or for the greater number; but I submit that is immoral in this case

because from the destruction of a group of people—their habitations and the rest of it—there is only a transient advantage to Canada.

The downstream benefits are of value for a very short period of time. The flood control benefits we would be providing the United States are equally transient; they disappear if we allow ourselves to be put under servitude forever, which of course we must not do. I think everybody who dealt with the matter and knows about it is convinced that the High Arrow dam, by the time the treaty is over, is of no value at all to Canada. It has no value to Canada now except to get some money out of the United States; that is all. On the other side, the storages are of continuing value. There is a very definite possibility that the people who are there, like the people with whom I had to deal in respect of the St. Lawrence, actually can be benefited without hurt to anybody. They can be given a better opportunity for life. We have several hundred thousand acres of irrigable land capable of forage crops in the Upper Kootenay. If we could provide irrigated water, we have a good basis for a stock industry. Today, in Windermere and the other areas, they are only on a subsistence basis. From the point of view in respect of which you are speaking it is far better we should take the real value into account and not take acre for acre. In the case of High Arrow it is destructive and in the case of the Kootenays it is perverse.

Mr. DAVIS: General McNaughton, you acknowledge there is roughly twice as much flooding under the McNaughton plan, but more power is produced in Canada as a result of that plan. We have heard evidence to the effect that roughly 10 per cent more power would be made at site in Canada. Have you any comment on that?

Mr. McNAUGHTON: Yes, I have comment.

Mr. BREWIN: Could we have the general's comment tomorrow? It is six o'clock. I am sure this is something on which he would like to expand for us.

Mr. McNAUGHTON: I would love to answer that question. Mr. Davis spoke of the fact that sequence IXa would produce 10 per cent more power. Those calculations are made with reference to the very early phases of the whole system. When you come to consider the later phases, running on into their life in that region, you will find that with flexibility which sequence IXa gives over the control of power and particularly in respect of the possibilities of development of the capability of the great plants to be built on the Columbia, the real values to Canada are not in the treaty and are not in the I.C.R.E.B. report, because those reports dealt with the earlier phase. The real value goes on and on and on increasing. That is what we think should not be surrendered; and we think that we should not be inhibited from obtaining those values in the future.

The CHAIRMAN: Gentlemen, is it agreed we meet at 10 o'clock tomorrow morning?

Agreed.

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HOUSE OF COMMONS

Second Session—Twenty-Sixth Parliament

1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 10

TUESDAY, APRIL 21, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESS:

General the Honourable A. G. L. McNaughton

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--------------------------------|----------------------------|----------------|
| Brewin, | Fleming (<i>Okanagan-</i> | Macdonald, |
| Byrne, | <i>Revelstoke</i>), | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Forest, | Martineau, |
| Cameron (<i>Nanaimo-</i> | Gelber, | Nielsen, |
| <i>Cowichan-The Islands</i>), | Groos, | Patterson, |
| Cashin, | Haidasz, | Pennell, |
| Casselman (Mrs.), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Langlois, | Turner, |
| Dinsdale, | Laprise, | Willoughby—35. |
| Fairweather, | Leboe, | |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee

MINUTES OF PROCEEDINGS

TUESDAY, April 21, 1964
(17)

The Standing Committee on External Affairs met at 10.00 a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Byrne, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Dinsdale, Fairweather, Gelber, Groos, Haidasz, Herridge, Kindt, Klein, Leboe, Macdonald, MacEwan, Matheson, Nesbitt, Patterson, Pennell, Pugh, Ryan, Stewart, Turner, Willoughby—(27).

In attendance: General the Honourable A. G. L. McNaughton; Mr. Larratt Higgins, Economist, Hydro-Electric Power Commission of Ontario; Mr. James Ripley, Editor, Engineering and Contract Record Magazine.

The Chairman presented the Fifth Report of the Sub-Committee on Agenda and Procedure, dated April 20, 1964, which recommended as follows:

1. That the undermentioned organizations or individuals, who have requested that they be heard by the Committee, be notified that the Committee is prepared to hear them on the dates mentioned below:

Friday, May 1st

United Electrical, Radio and Machine Workers of America,
District 5 Council, Toronto

International Union of Mine, Mill and Smelter Workers, Toronto

Monday, May 4th

British Columbia Federation of Labour, Vancouver

Thursday, May 7th

R. Deane, P. Eng., Rossland, B.C.; Mr. John Hayward, representing the Columbia River for Canada Committee, Vancouver, B.C.

Thursday, May 14th

Representatives of the Government of the Province of Saskatchewan

2. That the Hon. Davie Fulton, who has accepted the Committee's tentative invitation to appear, be invited to attend on Monday and Tuesday, May 11th and 12th.

On Motion of Mr. Herridge, seconded by Mr. Cadieux (*Terrebonne*), the report was approved.

The members resumed questioning of General McNaughton.

During the meeting the Vice-Chairman, Mr. Nesbitt, took the Chair.

At 1.00 p.m., the Committee adjourned until Wednesday, April 22, 1964, at 9.00 a.m.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

TUESDAY, April 21, 1964

The CHAIRMAN: Gentlemen I see a quorum.

I should like to present to this committee the fifth report of the subcommittee on agenda and procedure,

(see minutes of proceedings, page 523)

Perhaps I could have a motion in connection with this report?

Mr. HERRIDGE: Mr. Chairman, I move the adoption of this report.

Mr. CADIEUX (*Terrebonne*): I second the motion.

The CHAIRMAN: All those in favour?

I declare the motion carried.

Motion agreed to.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, was there not another decision made last night with regard to the hearings today, that we would only sit during one period?

The CHAIRMAN: Mr. Cameron, it is my understanding that we would ask General McNaughton to sit until 12.30 or 1 o'clock, whichever is convenient, but that we would not impose upon him any additional hearings this afternoon or this evening. That recommendation was not incorporated in the minutes. Would the members of this committee be agreeable to that suggestion.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes, so long as that is understood.

The CHAIRMAN: Yes.

We shall now resume questions. I have on my list the names of Mr. Davis followed by Mr. Brewin and Mr. Turner.

Hon. A. G. L. McNAUGHTON: Mr. Chairman, I have some information to give and I think it might be convenient to present it at the beginning of this meeting. Perhaps I may be allowed to give that information?

The CHAIRMAN: Yes.

Mr. McNAUGHTON: Mr. Chairman, you will recall that during our discussions yesterday attention was drawn to the relative size of the High Arrow and the Bull-Luxor reservoirs.

Mr. BYRNE: Mr. Chairman, I am sure the general may remain seated.

The CHAIRMAN: Yes.

Mr. McNAUGHTON: Thank you very much. Yesterday attention was given to the relative size of the High Arrow and the Bull river-Luxor reservoirs, and to the map displayed on the wall which was not to scale. That map has been taken away to be drawn to scale for your use later on.

In the meantime we obtained the respective volumes of the international Columbia river engineering board report which I have here this morning along with maps of these reservoirs which have been photostated. They are to identical scale and I shall present copies to you this morning. We have a number of copies for the members of this committee. Perhaps they should be distributed at this time. Mr. Ripley, would you undertake to distribute those copies to the members, please?

We have also been able to get from the I.C.R.E.B. report the reservoir areas in acre feet, the acreage of land which will be submerged, and also the acreage of the swamp that would be submerged. I would like to read these figures into the record if I may.

The High Arrow reservoir area is 130,000 acres, and the Libby reservoir occupies 17,000 acres in Canada. The Dorr reservoir occupies roughly 17,000 acres and the Bull river-Luxor reservoir occupies 97,000 acres. Those figures relate to reservoir areas. The total of these areas in the treaty project is 148,000 acres, and in respect of sequence IXa it is 114,000 acres. From the point of view of reservoir area the Arrow lakes requires 34,000 additional acres of land for reservoir area.

In respect of land submerged, at High Arrow it is 27,000 acres; the Libby proportion being 14,000; the Dorr proportion is 14,000 and the Bull river-Luxor proportion is 69,000. That means that the total regarding the treaty project of land submerged is 41,000, whereas the total in respect of sequence IXa is 83,000 making a difference of an additional 42,000 acres required for the sequence IXa plan for the treaty project.

I shall not give the figures in respect of swamp because that is land which is of no value to anyone in any event.

Among the other important aspects of the matter is the fact that between the Libby extension and the High Arrow project there are 2,300 persons who have to be displaced, whereas in respect of the Dorr-Bull river-Luxor project the final figure given in the I.J.C. report is 1,580. This means there are 751 more people to be displaced under the treaty than in the case of sequence IXa.

Mr. Chairman, I think those are the factual figures which were called for in argument yesterday, and which are, because we have not a final plan in respect of the recent assessments, the best figures that are obtainable at this time.

Mr. DAVIS: General McNaughton, yesterday we were referring to this matter of the extent of flooding and I think you will agree that we were primarily concerned with the new acreage to be flooded rather than the existing acreage covered by the Arrow lakes. You have given figures this morning to the effect that the new acreage flooded under the treaty will be of the order of 41,000 acres, and I must say that figure agrees very closely with earlier evidence in our proceedings before this committee. You also indicated the new acreage to be flooded under the McNaughton plan would be of the order of 83,000 acres, so that the highly generalized statement that the treaty would flood roughly half as much new acreage as the McNaughton plan is correct or, conversely, that the McNaughton plan would cover approximately twice as much new acreage; is that correct?

Mr. McNAUGHTON: Perhaps I may be allowed to answer Dr. Davis' question. This is an interesting example of the care which must be exercised when you apply statistics without any specific values of units with which you are dealing. Dr. Davis has said that we should exclude the water area of the Arrow lakes in any comparison. I do not contend for one moment that the area of the Arrow lakes in this comparison should be given the same unit value as the land which is to be submerged, but I would remind the committee that one of the great values of the Arrow lakes arises from the point of view of the tourist industry. If we are to use 46 feet of area in addition to that covered by the Arrow lakes we will destroy all the resources along the beach. The reservoirs are to be operated every year to a complete draw down so that we will have a variation in level from the normal down to a level some 46 feet lower. In addition we will have the ordinary flood waters on top of that to contend with, so the Arrow lakes area will lose a great deal in respect of tourist value. You cannot write that value off in these comparisons. I am not

saying this should be written off acre for acre or anything of that sort, but to make an intelligent comparison of value you must arrive at a unit cost.

In arriving at a unit cost let me repeat what I said in my evidence yesterday, and I feel very intensely about this subject. The flooding of 46,000 acres in the Arrow lakes region is going to literally destroy civilization in that area, an area which has been developed by a very wonderful group of Canadian citizens down through the years, and developed, as I pointed out, for a temporary and transient advantage which will disappear in the course of a few years. This is to be done to the advantage of our neighbours to the south, not to Canadians. I am in favour of giving those people advantages as long as this does not hurt us. I am not in favour of giving them advantages which result in tremendous vandalism to our own beautiful country.

I repeat that these values have to be taken into account, and I refer to the actual value of the real estate, the value to community life by which this country has been developed. We do not wish to destroy these communities.

When considering the Dorr-Bull river projects and the value of the community life that will be destroyed we must keep in mind the indication that the unit values of the properties further north, where the climate is not the same as in the High Arrow area because it is further north, are certainly not as high.

The other advantage is that, according to what agriculturalists have told us, there is a good prospect that some 300,000 acres within reach of the reservoirs—that would be along lake Windermere—are entirely suitable from the point of view of climate and land for forage crops, and with the establishment of forage crops we might be able to develop a cattle industry in that territory. This might create profitable employment for the people who would be displaced. In other words, they will be moved out of the low valleys where conditions are not too good in any event and given an opportunity—much as we did on the St. Lawrence—to move away from the restricted ground that would be submerged into a new environment where they might prosper.

Mr. HERRIDGE: General McNaughton, I think you inadvertently said "High Arrow" when you commenced your statement instead of the upper valley.

Mr. McNAUGHTON: May that be corrected, please. It is the upper part of which I have been speaking.

In the end we are going to have a number of power plants along that section. There can be a plant at Luxor and another at Calamity curve, if we get the greater water supply, and of course at Mica where there is inevitably a great deal of secondary power available. That power is in close vicinity and could be turned on for pumping purposes at very low cost. In fact I would recommend that as part of the rehabilitation program, which can be done without great cost to anyone else, a guarantee should be given for low cost pumping from the reservoirs to this new land and promotion of new industry at a perfectly legitimate cost.

I think I have answered your point that you cannot take these figures and statistics without taking individual values into account.

The CHAIRMAN: I wonder if I could ask members of the committee and also witnesses to recognize that we do only have a certain length of time for every member. I would therefore ask that the members ask specific questions and that, if possible, the witnesses endeavour to answer specific questions because these answers are taken into consideration by the committee with many other specific questions and answers. I suspect that if we roam over too wide a field we will never get to a number of other members of the committee who are very anxious to question our important witness.

Mr. DAVIS: I think the committee would agree that land values are important and that the costs of expropriation should always be included. Could

General McNaughton compare the cost of the High Arrow project, including expropriation costs on the one hand, with the cost of the Bull river-Luxor, plus the Dorr development which he advocates in the East Kootenay?

Mr. McNAUGHTON: Dr. Davis has posed a question for which basic information is not now available. We do know the results of the land estimation, the flowage costs that were worked out by the international Columbia river engineering board in close association with various departments in the British Columbia government—those figures are available. While there is no doubt that those costs have been revised, the information is not public and certainly is not known to me, although I have tried throughout the years to keep close track of the indications and changes in values.

When we come to the Arrow lakes, while we have not yet been given a specific figure, we have been given some indications in the evidence already presented to this committee by Mr. Williston who was one of the ministers in charge of the matter. We know that, having taken a second look at what needs to be done in the way of rehabilitation in that area, the costs are running to very high figures. We know from the hearings that were conducted by Mr. Paget that, for instance, a navigation lock had to be built to provide the facilities which were guaranteed Celgar when they built their big plant below the site of the Arrow dam. We know that there are extensive costs to be incurred in the interest of the clearing of the foreshore and the removal of stumps and so on so that the properties are not depreciated more than is possible, and there is also the question of the rehabilitation of the fisheries. It seems to me that the more these figures are looked at the more the cost will go up. I do not think any statistical figures have much meaning. Again it is a question of unit values, unit costs, and in the case of High Arrow the introduction of a number of services which were not a necessary part of flowage in the days when the I.C.R.E.B. made the report.

Mr. DAVIS: We have evidence that High Arrow will cost an estimated \$130 million, including expropriation. Would it be correct to say that the McNaughton plan in replacing the High Arrow project with the Bull river-Luxor-Dorr combination would be making an expenditure in excess of \$200 million?

Mr. McNAUGHTON: I have not made an estimate of the whole International Joint Commission sequence IXa in comparison with the treaty because sequence IXa is a completely self-contained sequence right through to the last works that are needed to be put in. The estimates lay emphasis on the importance of the complete plan. Those are the figures which I have worked out and have kept up to date. In the case of High Arrow, with the information which has become available, it has been incorporated in the comparative plan in the International Joint Commission report which is very close to sequence VII if it is fully developed. I can give you the estimated costs of those with the latest figures available. I would be glad to give them to you.

Mr. DAVIS: I would like to get the costs of the projects in the mountain trench which the McNaughton plan involves.

Mr. McNAUGHTON: I do not have the particular plans. I have it worked out by the sequence of development of the plans step by step, phase to phase, but I will give the investment cost of sequence VII to completion. It will cost \$948 million. And sequence IXa to completion will cost \$960 million, which gives a figure in favour of sequence VII of about \$12 million, and that is before there has been any allowance made for the flood control benefits which might come in.

Now, when you come to operating costs, on the basis given in the I.C.R.E.B. report with 5½ per cent interest and so on, it is the same for both, the identical same basis, but the benefits to accrue—the flood control benefits being in accord with the recommendations of the International Joint Commission and with

International Joint Commission principles—have an annual cost of 61.1 million for sequence VII, and \$61 million for sequence IXa, so you see they are very close together.

But here I want to draw to attention the importance of the fact that according to the International Joint Commission in sequence VII you would get about 2,075 megawatts of average annual output, and in sequence IXa you would get 2,559 megawatts, which is a difference of just under 500,000 or one half a million kilowatts which, you will agree, is of very considerable value.

Mr. DAVIS: You have told us now that the McNaughton plan would cost more in terms of capital outlay than the treaty plan, and that investments in Canada would be greater.

Mr. McNAUGHTON: Twelve million dollars.

Mr. DAVIS: The cost would be about 400 to 500 odd for all the projects in the McNaughton plan, I mean, between \$400 and \$500 million.

Mr. McNAUGHTON: No. The cost of sequence IXa and the cost of sequence VII carried to complete development as proposed would be \$948 million as compared with \$960 million. There is a difference of \$12 million.

Mr. DAVIS: I would like to narrow it down to a comparison between the treaty plan and comparable projects. The treaty plan includes High Arrow, Mica, and Duncan while your plan would include the Bull river, Luxor, Mica and Duncan. The treaty plan involves an investment of around \$410 million, and if you include the Bull river, Luxor and High Arrow the investment would be higher.

Mr. McNAUGHTON: Dr. Davis is dealing with an interim development. I have pointed out from the very beginning that the first thing we do to get settled in this matter is to plan and carry out complete development, and while I can pick out figures from these tables which I have to answer that question, it would take me a little while and I do not want to answer it because we are considering the whole future not an interim plan.

We must consider the whole plan, and that, I may say in passing, is one of the tremendous disadvantages of the treaty plan, as it takes no proper stock of the future of this country, whereas the sequence IXa gives us an opportunity in the years to come to realize great additional benefits which are not included in those benefits which I have mentioned here, and which give us the use of hydroelectric generation as compared with thermo and atomic energy and so on. These values can be enormously important but unfortunately they are not reflected in the information being put before this committee. I am not in a position to give the details of them. There is nobody who has got access to the information, which has been put together perhaps by the British Columbia Hydro and others who will know that information. But we have general information from responsible authorities not only in the United States but in the experience of system operation where hydro can be introduced, and it has changed the role in the United Kingdom, in France, and other places, and it shows that the unit value of the project when you come to peaking is multiplied tenfold perhaps.

We do not get those plans. We are embargoed from them. There is no defence to say that in the treaty you reserve the position that after 80 years you can take the treaty plan and convert it into, what Dr. Davis calls, the McNaughton plan. I have never given it the name of McNaughton plan. That plan is the work of a lot of people, and I have never arrogated it to myself. A lot of other people were involved, and when I do not use or put my name to it, it does not mean that I am not competent in respect of it. But I do not think that is the way to put it. It should be called sequence IXa.

In sequence IXa we retain vital elements. We control the outflow of the Kootenays right in Canada, where they are held with certainty for the benefit

of Canadians in oncoming generations. What we do in the treaty is this: we have made provisions that after 20 years we can take one and one half million, and after 80 years we can raise this figure to five or six million acre feet of diversion; but that is a fantasy, because while we have a right in the treaty versus the United States to do it, as I say, this is not, when dealing with the United States, the right to do a thing. It is the exercise, which makes two different kettles of fish.

The truth is that the moment this development starts, we are going to put ourselves in the same difficulties that the United States put themselves into in the basin south of us namely, they went ahead with their at site head plants because they were spectacular and interesting in politics and they could get political support, but they found it was difficult to get reservoir areas. They did not do it, and the result is that now they cannot get those reservoir areas. There are plenty of reservoir areas in the United States to do legitimate regulation of the plants that they have got, but the costs have escalated to such an extent that they cannot take advantage of them. That is true up in the Snake and it is true in the areas around Grand Coulee itself.

In this treaty we have built up a fantasy that we have rights incorporated in there which will be impossible to exercise. What is the good of it? It is misleading. That is what is so vital in considering all these pseudo values, having regard to the economic costs in the United States at the moment. That is significant. We are a country which, we hope, will require these long term benefits and they must be looked at. But if we are to do the job objectively and successfully, and if we are to take a decision successfully on information which is not complete in itself, then only confusion is going to be brought about, and confusion will be worse than confounded.

Mr. DAVIS: General McNaughton, I think you will agree that sequence IXa involves the expenditure of many hundreds of millions of dollars in Canada. I think you and others have said that the expenditure necessary in the United States in order to take advantage of Canadian storage will be less than \$100 million.

If the benefits are shared equally, does it not follow that the benefits of the downstream power from sequence IXa will cost many times the United States benefits?

Mr. McNAUGHTON: I am not willing to subscribe to the statement in the form in which Dr. Davis has made it. It looks to me again as though what he is leading up to is that we should take advantage of the present situation in the United States in order to obtain a revenue from our storage in the interim. That is exactly what I tried to do originally when I put forward the proposals—which were quite novel but not nearly as novel as they have been credited as being by many people. These downstream benefits, I think, are very simple of explanation.

Always in discussing downstream benefits and the methods by which they were to be developed I made the stipulation that the works we put in in Canada were to be the works that fitted in with the ultimate best use of resources in this country; and in my arguments, particularly with General Itschner, that was very much appreciated because of the difficulties with which he had been faced in the United States by the neglect of this principle.

There are difficulties in the United States today because the authorities of that country failed to take up property when it could be taken up. The result was that with the stimulus of general development that took place, alternative uses were brought in and vested rights were created. The result was a paralysis. We should not repeat that terrible mistake.

It is for that reason that fundamentally, even if sequence IXa were somewhat more expensive than sequence VII, a committee such as this which is advising on long term policy ought to keep very much in mind the question: does this hurt us for the future, or does it not?

I do think, Dr. Davis, that when you come to analyse sequence VII—the treaty plans—and when you obtain, as I hope you will, evidence from consulting engineers, and when you have a chance to examine their evidence, you will see the real costs that will be involved. My forecast to you, which I make from having watched the situation over a number of years, is that you have not begun to state the cost to the public of the High Arrow development. It has already doubled.

In the very early days, I threw all my weight against even bothering with further investigations of High Arrow because, from the first reports and particularly from the geological reports, some idea of the immense difficulties of building a safe dam in that region became apparent.

I look forward to hearing the engineers in due course, but for the purpose of your argument I say to you that I do not believe, from the figures we have received so far, that full provision for these eventualities has been made.

Mr. DAVIS: But you do agree do you not, General McNaughton, that the investments in Canada under sequence IXa are many times the investments the United States will have to make in order to achieve the downstream benefits? The investments in Canada are many times those of the United States, are they not?

Mr. PUGH: What is "many times"?

Mr. McNAUGHTON: The trouble is that Dr. Davis' questions are in terms of generalities and I find myself in very great difficulty in putting myself on record in answer to those questions. The terms have to be specifically defined.

Mr. DAVIS: I will be more specific. I will suggest that the storages in Canada under sequence IXa will cost in the order of \$500 million. You yourself have said—and others have certainly said—that in order to take advantage of these storages in the United States, the United States will have to make investments, in additional generators and so on, costing less than \$100 million. If the benefits shared are equal, Canada obviously must spend more to achieve its half than the United States will spend. In other words, the United States benefits will cost a fraction of the Canadian benefits.

Mr. McNAUGHTON: The first thing on which I will take you up is your term "shared equally". The benefits are not shared equally. In the short term we obtain roughly only 40 per cent of the downstream benefits.

Mr. DAVIS: In your proposal they would appear to be shared equally.

Mr. McNAUGHTON: My proposal was not only that the benefits should be shared equally. My proposal was that as the system of operation changes to optimize the system of benefits from our regulation, the criterion—which is incorporated in annex A, paragraph 7—should be that the prescription recommended by the International Joint Commission in the International Joint Commission principles should be followed; that is, due account should be taken of the other values. I gave you a method of taking account of those. It did not originate with me. This system is in general use between large utilities which are concerned with such things. It is set out in my paper in the *International Journal* of which you have copies.

Therefore, you see, I am not prepared to make any comparison on the short term, because I do not think that trying to obtain something to make money in the short term which will hamper you in the future is the way for parliament to look at these matters.

Mr. DAVIS: You are saying that over the short term—a term of several decades—you would concede that the United States would obtain much cheaper power under this arrangement than would Canada?

Mr. McNAUGHTON: It is not a case of several decades. A very interesting table has been given in the presentation contained in the blue book at page 99 in which I see that our agreed entitlement starts off at 113 megawatts and in the course of 40 years—I am looking at the energy entitlement—it goes to 207 megawatts. When I make a comparison with the latest entitlement I find the figures are very much lower than the ones used by Gibb in his report. I think they averaged about 25 per cent lower over the period. Therefore, all I can say about this is that every time we obtain a new set of figures from the United States we find there is a further deprivation from the downstream benefits that we have, and it is by no manner of means a half share.

Mr. DAVIS: I have one more question, general.

How long would you flood territories in Canada in order to provide downstream benefits in the United States, and would you export power in order to help to finance these projects?

Mr. McNAUGHTON: I have never taken any objection to the export of power per se provided it is surplus to Canadian requirements, and if it is exported it is for a very short period of time which is terminable. The period is not so important as the fact that it can be brought back to our use as, if and when we require it.

Mr. DAVIS: Does the 30 year agreement under the sale agreement in the protocol offend your sense of how this might be appropriately done?

Mr. McNAUGHTON: The agreement itself does not.

Mr. DAVIS: The term of years?

Mr. McNAUGHTON: The term of years does not; but when it involves the building, in order to make a quick profit, of a dam such as the High Arrow dam, with the consequent elimination of the people in that area and with a scale of diminishing benefits, when in the end all that sacrifice is of no benefit to Canada whatsoever, then it does. We end up with a project, with works, with the Arrow lakes flooded, and yet those things result in no value to Canada but in some value to the United States.

If you look at the Dorr-Bull river-Luxor projects, you will see that if we direct our efforts toward building projects which are in keeping with the final best use plan, we can give the United States all the benefits at very little extra cost by choosing our storages properly.

Mr. DAVIS: How long is the term in which you would enter into an arrangement with regard to this storage function? I am not dealing with the sale of downstream benefits now, but rather an arrangement with the United States in respect of storage.

Mr. McNAUGHTON: In respect of an arrangement with the United States which was made along the lines I have indicated in my paper in the *International Journal*, I would not object in the least to a 30 year arrangement, but I would object even to a 10 year arrangement on the basis of the wording in the treaty with relation to annex A, paragraph 7, where the criteria is set forth.

Mr. DAVIS: That is fine, Mr. Chairman.

The VICE-CHAIRMAN: Mr. Brewin.

Mr. BREWIN: General McNaughton, I think you have already given us, as have other witnesses, something of this, but as I understand it one of your basic criticisms of the treaty is the selection of projects. Would you just summarize for the committee the basic differences between the treaty plan and sequence IXa? I would like to follow that up with another question later, if you would just give us the differences in summary.

Mr. McNAUGHTON: It is a little difficult because my maps have gone to be checked up with regard to the acreage.

Mr. JAMES RIPLEY (*Editor, Engineering and Contract Record Magazine*): The profiles are on the chair.

Mr. McNAUGHTON: The treaty plan is on the left, and what we have designated the Canada plan is on the right. We have called that the Canada plan for the reason, with the reservations to which I have referred in respect of it not being very useful to make diversions later on, that it was recognized by the government of Canada as the best plan for Canada. That is why we have called it the Canada plan; it is the sequence IXa plan, too.

Mr. BYRNE: Is it recognized at this time as the best use plan; is it recognized by the government of Canada now as the best use plan?

Mr. McNAUGHTON: Well, there are constant statements being made to the effect that I ought to be satisfied because provision has been made that if they want to do it later on they can carry on this plan. I say that that safeguard which is being invoked there is not real, because while the right to make these diversions has been conceded, after some 80 years the practical possibility of doing it is not there at all; so, it is not true.

Mr. BYRNE: Does the government of Canada today recognize that as the best use plan?

Mr. McNAUGHTON: I do not speak for the government of Canada.

Mr. BREWIN: Mr. Chairman, I suggest that Mr. Byrne leave that question until later.

Mr. BYRNE: I suggest I have the right to ask my own questions and not be advised by Mr. Brewin.

The VICE-CHAIRMAN: I think Mr. Brewin is conducting the questioning, and if there is a supplementary question—

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): On a point of order, I think in the first place you will have to decide whether or not the question is an appropriate one to address to the witness, and whether in fact it is really a supplementary question.

Mr. BYRNE: General McNaughton has said this has been determined by the government of Canada to be the best use plan. I am simply asking, does the government of Canada today consider this so-called Canada plan the best use plan today; does this still hold?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I suggest this is not a question which should appropriately be asked of anyone except a representative of the government of Canada, and I do hope a representative is to appear before us again.

The VICE-CHAIRMAN: In view of the fact that General McNaughton is no longer a representative of the government of Canada, I do not think he is in a position to answer that question today. Therefore, I would agree with Mr. Cameron's argument in that regard. That will not preclude you, Mr. Byrne, from asking questions of opinion after Mr. Brewin has finished his questioning.

Mr. BYRNE: I would like to know whether this was a decision.

Mr. McNAUGHTON: It was a decision at the time, and up until quite recently. The Hon. Mr. Lesage who was the minister in those days recognized this plan as the best use plan, and Mr. Fulton also made statements to the same effect. What the view of the government now is, is not known to me.

Mr. BYRNE: With the information it had available, the government at the time was of that opinion, but certainly as of today it cannot be true that the government of Canada believes this to be the best use plan for Canada.

The VICE-CHAIRMAN: I do not think it would be proper to ask General McNaughton to answer for the government of Canada today.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I point out that during the whole of the time Mr. Davis was questioning the general, from 10.05 a.m. until 10.45 a.m. there were no interruptions. I would suggest that is the best way in which to conduct the meeting.

Mr. McNAUGHTON: May I continue?

The VICE-CHAIRMAN: Yes.

Mr. McNAUGHTON: The fundamental difference between the treaty plan and the Canada plan—and I am looking at it in the long term view—is that in the treaty plan permission has been given to build the Libby dam. Now, the Libby dam, if it is built, is a project which is going to cost something in the order of \$350 million to the United States. It has an extension into Canada which runs up the Kootenay for some 42 miles; it inundates some 17,000 acres of Canadian land, and from the point of view of its present importance it causes 150 feet of extra flooding at the boundary. In that plan, free gratis, for nothing, we give to the United States an extra 150 feet of head at Libby. That enables them to raise the head from 190 feet which is otherwise available to some 340 feet, and gives them the opportunity of putting in an establishment at the dam itself which is estimated to be capable of expansion to something more than 800,000 kilowatts. To operate that dam and to get these values out of it, it is essential that the United States shall have control of the water originating in the East Kootenay, the flow down the Kootenay river, and by one means or another that they should have continuing control of those flows in perpetuity. On the other hand, at very, very much less cost it is possible to build the dam at Dorr which, if we had the other map, we would see controls the flood flows on Bull river and the flood producing state rivers which produce serious floods on occasion.

And, above the Bull river dam we would conserve the rest of the flows of the Kootenay river, let it pass across the Canal Flats into Columbia lake and lake Windermere, and down to Luxor where there will be another dam.

You will notice that the waters which are stored there are on the highest elevation on those profiles. If the water is used that way, used on the Kootenay, back through Murphy creek, and across the boundary into Grand Coulee, this would represent an additional 630 feet of head in Canada. Roughly 5.8 million acre feet of average annual flow are required; but, it takes only a simple calculation to show that represents an amount in average annual usable energy of something of the order of 360 megawatts which is handed over by us to Canada, the product of our own country, and for no return.

Now, this means for all practical purposes if the Libby dam is built it becomes the highest upstream storage on the Kootenays and for all practical purposes then the United States becomes the upstream state on the Kootenay river with all the privileges and advantages that come from being the upstream state under article II and other provisions of the treaty of 1909. I have given a careful explanation of that advantage which goes to the United States as a gift from us in the article in the *International Journal*.

So, I say to you it is a very serious matter to hand over and to deprive Canada of 400 megawatts of power by way of a gift. Do you realize that those 400 megawatts that we are giving away are of the same order as the average Canadian share of the downstream benefits that are coming to Canada. In other words, what the article is doing in this treaty is giving away our birthright by giving the United States the authority, and writing the treaty in such a way that while we have nominal rights we cannot exercise them and, in return, if I may use these words, taking a short term downstream benefit arrangement which is less than what we have given away in one fell swoop.

Gentlemen, those are the differences between the two plans in a nutshell. In addition to that, as I said before, the treaty provides for High Arrow, which is only a transient advantage to Canada, at a cost of tremendous disruption in our communities.

I think I said earlier that any responsible government which does that sort of thing to its good people is immoral, and I repeat it.

Mr. BREWIN: Mr. Chairman, I think the general already has given us some of the information I wanted. However, I wonder if he could summarize the advantages, as he sees them, of sequence IXa over the treaty plan in terms of three different matters; namely, power; flood control and the use of water, so that we can analyse the advantages that the general sees in each one of these three fields.

Mr. McNAUGHTON: Mr. Chairman, in answer to Mr. Brewin and in respect of the question of power, may I say that in making comparisons on power produced you must, of course, set a year in order to get your conditions right. As of 1985, very careful estimates were made by the International Joint Commission, which are published in the reports which are on the table, as well as by the International Joint Commission, annex 6.

In comparing sequence VII and IXa, VII being the treaty of full development, the difference is as follows: sequence VII would give you 2,075 megawatts at full development compared with sequence IXa giving you 2,559; so, there is a very substantial increase in firm power or, rather, as they call it, prime power, as of 1985. Now, by 1985, the change in use of hydroelectric will have begun to be pretty well established; in other words, in the earlier days we used hydro to provide the base load system. We are very interested in firm power. But, as our American friends run out of hydro they have to turn to thermal, whether in respect of the big modern steam plants or, later on, perhaps the atomic energy plants. Under these conditions it is found to be much more advantageous to assign the base load to the atomic energy or to the thermal plants. In fact, neither the modern atomic energy plant nor the modern thermal plant is capable of anything except a steady load because they are not designed to stand the thermal shocks of sudden peaks of power coming on and having to cut back on the output. They are not capable of responding with sufficient speed to the needs of increases of power in order to meet the system load. So, and quite rightly, the whole system of operation has to change to suit that condition. Hydro is used to carry this immensely valuable peaking service; so, that is not reflected in the figures I have given because these were given specifically as a test for the first phase, 1985. I would say that in no figures which have been offered or made public so far is this future condition of value reflected.

Right from the very beginning we kept that very much in mind. In the development of the plan in sequence IXa we put our storage at the highest altitudes we can find, provided that we can supply it in one way or another, and encourage the development of the installed capacities of the great plants at Mica, Downie, with the Revelstoke canyon project below that with less generation capacity. If we do not install them, we plan to provide for them.

I am very pleased incidentally, with one feature in the British Columbia report. It is a favorite power project of mine, to raise the head at Mica by some 40 or 50 feet. This seems to be incorporated in the latest plans. Also without doubt they were going to provide the extra base for the extra units that are needed. In other words, someone has taken a look at future peaking power conditions.

Mr. BREWIN: I understand from what you have said that this cannot be worked out and that you have not worked it out in detail, but can you give us some sort of order of magnitude of the additional value for peaking purposes in 1985?

Mr. McNAUGHTON: Yes, I would be glad to do that for you. The latest authoritative statement in this regard comes from the United States which has been face to face with this problem which is some years hence as far as we are concerned. The authorities there have given it more attention than we have.

I have before me a publication of the United States department of the interior prepared by the energy policy staff and issued in February of 1963. It is entitled "Anticipated Interconnection Patterns for Large Electric Grids".

I should like to read the paragraph touching upon this peaking power matter in respect of which it is so vital to choose sites so that you can put your plants in a position to give peaking powers in years to come.

I should like to read the following paragraph:

The large thermal generating units referred to above are limited in flexibility and cannot be started or stopped readily. Their economy depends on continuous operation for a large percentage of the time. They are essentially fixed capacity units and can best function to carry the base load. Sources of peaking power must, therefore, be sought. Hydroelectric power performs this role admirably. It is flexible, can be readily added or removed from the system, kept as 'spinning reserve' or 'standby reserve' to be brought into service in a minimum of time to meet the demands on the system, and is economical in operating and maintenance as well as replacement cost.

The availability of conventional hydroelectric sites is limited when natural storage is required to meet the operating pattern. Fortunately, pumped storage offers great potentialities.

In the United States they have been hampered by their failure to make foresighted provision for storage bases and are now turning in a big way to the development of sites at the tops of hills near sources of water supply and using their energy to pump the water up into these sites and taking it down again at peak load periods. This is a reversing proposition. We are doing the same thing where our storage is limited, as it is in Ontario. That is the reason for the big pumping units on both sides of the boundary.

One of the experts of Ontario Hydro has written a very important paper on this subject for one of the engineering trades associations. I had the privilege of reading this paper last night. He pointed out that while the amount of peaking that is needed measured in terms of actual energy is not large, it must be available at a tremendous rate for very short periods of time. However, the value is so large it is economically justifiable today. The figures he gave in respect of the values of the particular system with which he was dealing raised energy values to something of the order of 30 mills per kilowatt hours.

I have seen reports in respect of the great Californian water scheme which show that on occasion in regard to peaking power they are willing to pay 60 or 70 mills per kilowatt hour. This means the operation of these plants at a load factor of probably 70 per cent.

This is a completely new concept and I say to you that as matters stand, by using the plans covered by the treaty with those innovations which have unfortunately got into it, we are losing the values of these conditions through which we might develop the capability of these larger plants where plenty of water is available. It is important to consider peaking power and daily loads, having flexibility to meet general upsurges in peak systems and providing flows so that the existing hydro plants can peak this up. Considering the economics this is very expensive.

To summarize that section of my remarks in reply to Mr. Brewin's question, I should like to state that it is important in our long range plan in addition to the economics of sequence IXa to work out the full advantage of properly phasing in our development, and it is almost as good as the initial projects

covered under the treaty in terms of strict economics. The important thing is to conserve the possibility of developing these peaking power bases under the ideal conditions that are represented by sequence IXa.

I think perhaps to illustrate this still further I should quote from another project in respect of which I have had six or seven years experience in working out the background. I refer to the Passamaquoddy power project.

Under the instructions we had from the governments we were told to develop Passamaquoddy for the maximum of firm power. We found that it was possible to develop about 300 megawatts to give firm power. We had to get some river storage in order to firm up some of the times when the sun does not make the tides quite as good as we needed. It became evident in the course of this study, and in fact we reported this to the governments, that under those conditions for firm power the Passamaquoddy was not an economical proposition for Canada and only a marginal proposition for the United States.

However, we suggested that a new term of reference should be given to a board to consider the use of this great power potentiality for peaking purposes. The preliminary reports of that changed concept have been presented, and that 300-megawatt potentiality has now grown, using the same tides, water and everything else, to a capability of one million kilowatts. All the utility systems along the Atlantic seaboard are offering contracts in advance for the purchase of power at very much enhanced rates. They are not buying energy but are buying standby reserves so that if anything goes wrong with their systems, for example, they are interrupted by lightning, within a twentieth of a second, and I mean a twentieth of a second, the units with hydro behind them can pick up the load and carry on. This is an immensely favourable service for which they are willing to pay, and that is what I meant when I said, as I have said several times, that we must preserve the possibilities for the future, by diplomacy or physical control—preferably both but certainly the latter—of changing our system to suit the changing environmental conditions as they come about. This is the advantage of sequence IXa as compared with these other sequences.

Mr. BREWIN: Looking at this in terms of the future and knowing as an engineer that you are unwilling to put a figure on it, is there any sort of order of magnitude in respect of these changing benefits of which you speak that can be made?

Mr. McNAUGHTON: In system operation it is quite clear that the hydro will be probably worth two or three times as much to us after 1985 as it is in the initial stage. I know the unit values are forecast in the Ontario system to rise to 30 mills, but you have to be careful with that because the quantities are small.

Mr. BREWIN: May we come to the second part of my previous question concerning flood control?

Mr. McNAUGHTON: I made a very long statement yesterday on the question of flood control and the liabilities which are being placed on Canada if the treaty and the protocol are ratified. In my brief I contend that according to the interpretation put on the clauses by my United States friends—and I do not blame them for it—they will obtain in perpetuity the full control of the operation of Canadian storages on call for flood control. That means that as the situation stands at the moment there are 8.45 million acre feet in the three Canadian storages allocated to flood control. However, that is not all they get because they have all the storages, 15½ million acre feet, and if we build additional storages, as we probably will, one at Murphy, about a million acre feet, we can also raise storages at Kootenay lake, two million acre feet, and we have several other potential sites that are available, all this will increase it somewhat. So that those storages are available to them and are located on

the path of most of the damage producing floods that originate in Canada and flow into the United States. Naturally what the United States wants to do is to empty our reservoirs at a cost for which they are willing to compensate us in power which, according to the treaty, is compensation at a lower value of thermal power. This does not take these other values into account. They will then be able to operate them as they wish.

Now, what does that do? What will happen to us? The United States have the right to do it if they can persuade us to be acquiescent. They are going to use these storages to capture the crest of the floods which are anticipated and to put them in the reservoirs and let them out evenly. We do not get any benefits from that, and after 1985 they will all be gone. Those are values of immense consequence downstream in the years to come, and they have not been taken into account. What does it do? It enables the United States people to economize down stream; they have an even flow in place of a flood flow. It is not only flood damages that are given them; there are a lot of system benefits that come out of this type of operation.

On top of that, you know that the cities on the west coast such as Portland, Oregon and Vancouver are just bursting at the seams and they are anxious to spread out wherever they can as their territory is limited. This protection we give them will enable them to do so. There is no compensation put in the treaty for the contribution which we have made to make investments running into billions of dollars possible to the United States. We allow them to make these investments and we stand guard over them; we have to do it forever or otherwise under the treaty we are responsible and we can be sued. I say that is not right. We are willing, within reason, to help the United States on this flood control matter up to the primary flood control objective, or the 800,000 cubic feet per second control. That is reasonable. However, to go beyond that is unreasonable and we will only be cutting our own throats in doing so.

Mr. BREWIN: As I understand it, all this is a consequence of the present treaty plan. Is this removed from what we have described as the IXa sequence plan?

Mr. McNAUGHTON: No; the outstanding benefits of sequence IXa are that these matters are taken fully into consideration and the best arrangement possible is made. Under sequence IXa you can give the United States enough storage use to protect them in the primary objective of 800,000 cubic feet per second they already set and to help them handle, on rare occasions, greater floods, but this should be limited.

Mr. BREWIN: Is there any difference in the effect of the flood control plans provided by the two different schemes we are discussing, or are you saying that whichever sequence you have you should retain control, which is not in the present treaty?

Mr. McNAUGHTON: It is both, Mr. Brewin. Sequence IXa is developed to implement the ideas I have been expressing. The result of that, as far as Canada is concerned, is that the waters in the Columbia for example will be stored in the High Arrow storage, and those of Dorr-Bull river-Luxor in the lower storage of Libby where we have no control of them. With those storages we can give the United States all the benefits; they are adequate to protect the Bonners Ferry region in the Kootenay. This can be done as a matter of good neighbourliness, and it is an offer which we made ourselves because if we do the work we are entitled to the storage benefits which they would otherwise have assigned to Libby. I do not believe we should gesture away our resources of the future as a matter of charity—it is not good business. I still say you can get these in sequence IXa at much greater benefit and much less cost to Canada than you can under the treaty plan.

Mr. BREWIN: Can we come to the last point, the use of the water? Perhaps you could tell us the importance of the use of water; compare the two plans, and then give us some indication of its importance.

Mr. McNAUGHTON: Mr. Chairman, the use of water is probably in the long term the most important aspect of the conservation of the waters in the Pacific watershed, wherever it may be. Under the treaty of course it is asserted that when we come to get consumptive use of water and require water on the prairies, we can take it and put it there. In the next breath some people have taken as their source the estimated cost, which was given as a preliminary figure for the Saskatchewan government—I am thinking of the Dorr-Bull river-Luxor reservoirs—of some \$7 an acre foot to take it across to the prairies. Those figures are preliminary and may be subject to some consideration plus or minus, one way or another. However, think of the value of the water at the other end compared with what people are paying for water now. In California they are paying \$470 an acre foot for fresh water; in Texas the figure is \$325 an acre foot. The best figure that is available for desalting the sea water which is being pressed with great vigour—and one of its great uses is for the development of atomic energy—is \$163. One hundred and sixty three dollars is the latest figure from the Atomic Energy Commission. According to a recent report I have seen, by 1975 this cost may come down to \$75 an acre foot. The retail price of water in Chicago and New York has been worked out at \$70 an acre foot. In Toronto it is \$55, and in Vancouver it is \$35, and so on. So you can see that when it comes to consumptive use for irrigation in regions where irrigation is applicable, the values have been in the case of the storages we are considering while values for use on the prairies are several times greater. The Lord in His divine providence caused these rains to fall on Canadian territory, and it is a principle of law that we have under the present treaty today the right to make use in our own way of what the Lord gives us.

Mr. BREWIN: You mean the 1909 treaty, do you not?

Mr. McNAUGHTON: The 1909 treaty, yes.

Mr. BREWIN: Not the present treaty?

Mr. McNAUGHTON: Not the present treaty by any manner of means. But under the 1909 treaty we have the right to divert for consumptive purposes, and therefore in due course until we come as a sovereign state ourselves to give that right away, it is something with which posterity is endowed for all time, because this is required to be done. All I am trying to speak for now is to say that this \$7 acre foot is not a cost which should limit us, or will limit what we do about dam costs.

Mr. BREWIN: To the extent that we have given that right of diversion in the prairies away—and I know there is a dispute about it—have we received any compensation whatever under the present treaty for the water given away to the extent that we have the ability to use that water?

Mr. McNAUGHTON: I have said repeatedly that we have not, and I produced on occasion the argument to show it, because according to the storages that are in the sequence IXa plan there is a capacity to give the kind of regulation which is necessary for the United States to have in this period of time when we are interested in firm power over a short term, and that results in this downstream benefit.

All these benefits can be produced from Canadian storage at somewhat greater present cost, but over the period at a lower cost than the other way round.

Mr. BREWIN: My understanding is that in the presentation made to us it has been suggested that the right of diversion specifically provided for in the article XII, after various periods, 20 years I think it is, article XII—no, I am

wrong; it is article XIII. Under article XIII of the present treaty, subclause (2), after 20 years we can divert 1,500,000 acre feet of water from the Kootenay, and at the end of 60 years we can divert, or we are entitled to further diversion, and I shall not spell it out in detail; and in the last 20 year period there are certain other rights of diversion. I think it was said that that would enable us at a later date to carry out the main features of the IXa sequence plan. I understood you to say, on the other hand, that the right of diversion provided in this treaty is illusory in your opinion.

Mr. McNAUGHTON: That is right.

Mr. BREWIN: Would you please explain that to us.

Mr. McNAUGHTON: I would be glad to repeat it, because the reason for it is that you cannot effectively make these diversions particularly where large pumping is required unless you have reservoirs. Eighty years hence, in our case just as in previous cases in the United States, property values and installations and economic development in those reservoir areas that we would like to have, or would need to have in this case, are inhibited because they would be far too costly; and in that I am merely basing my statement on the precise experience which the United States army and Bonneville power administration have had in regions south of us where they neglected these things in the rush of early developments and where they did not pay attention to reserve these storage areas.

Mr. BREWIN: In other words, despite the legal right of diversion provided by the treaty, the treaty is assisting in the building up of vested interests which you could not override at a later date.

Mr. McNAUGHTON: That is right. And I can give an example of a cryptic comment that I have often used when I said that in negotiations with the United States a right and its exercise—and I suppose in negotiations with any country—are two entirely different things. We have plenty of right today in the treaty, but we have the determination of the United States to keep the Kootenay flows, regardless of the right, flowing into the United States. And there are other clauses which have been inserted in the treaty in dozens of different places—I find new ones almost every time I read it—which prevent the exercise of rights which presumably we have been given, and which are being used to lull us to sleep at this time.

Mr. BREWIN: There are one or two other questions I want to ask General McNaughton but I have had a fair go, and I now defer. Would you please put my name at the foot of the list for a later occasion.

Mr. TURNER: I have a few questions of General McNaughton on some of the material which was distributed this morning. I turn to the sheet in connection with the Columbia river reservoir maps which he introduced this morning.

Mr. McNAUGHTON: Yes.

Mr. TURNER: In preparing the High Arrow treaty plan, and the Bull river—Luxor sequence IXa, you compare the areas of the reservoirs, 130,000 acres as against 97,000 odd acres, and I gather from your explanation that a good proportion of the 130,000 acres would have been areas of the Arrow lakes under natural conditions. I want to ask you whether or not about 100,000 acres of the 130,000 acres do not represent the Arrow lakes as existing under natural conditions?

Mr. McNAUGHTON: I think that the statement again, as based in the terms in which Mr. Turner puts it, is about right. But I would like to say to you that when looked at from the tourist industry, the fishery people and everybody else, the Arrow lakes in a state of nature is a very desirable spot; but when

you put flowing on top of it 46 feet, then inevitably these values will be compromised if not destroyed. I say to you that the mere statement you have made does not reflect the damages to be created.

Mr. TURNER: Without getting into the aesthetic argument for the moment, and just looking at the figures, I would like to ask General McNaughton whether, in making a comparison it would not be fairer to take the true comparison of 30,000 against 27,000 acres.

Mr. McNAUGHTON: I would answer that by saying most emphatically no, and for the reasons I have given.

Mr. TURNER: I turn to the figures you introduced concerning the number of people who would be displaced. I think you mentioned a figure this morning of 2,300 people who would be displaced by the High Arrow-Libby project. Those figures were 1964 figures. Against that, for the Bull river-Dorr-Luxor diversion you mentioned the 1957 figure of 1,580. Is that a proper statistical comparison? Is it correct statistically to use a 1964 figure for the treaty project and the number of people displaced against the 1957 figure for the sequence IXa plan?

I say that to you because the figures we have been given would indicate that in the High Arrow area—that is excluding the Libby area—between 1957 and 1964 the population rose from 1,600 to 2,000. I wonder whether, in the Bull river-Dorr area, the figure of 1,580 in 1957 would not be far nearer 2,000 or 2,200 today.

Mr. McNAUGHTON: Mr. Chairman, I am well aware that in these areas there is a certain fluctuation, but one must remember that in both areas we are dealing with people who have been established in farming and other communities for a long time. There is not very much shift because of that fact.

However, the figures which I have given are taken straight from the blue book. If you will look at page 50 of the presentation you will find the figures we have quoted. I am not saying they are entirely right because since the International Joint Commission reports I have not had an opportunity to go around and verify their accuracy. But I would say that the figures used in the blue book should be authoritative.

Mr. DAVIS: May I ask a supplementary question?

Does sequence IXa not flood out part of the town of Castlegar, and is that population included in the figures which have been given for comparative purposes?

Mr. McNAUGHTON: The figures that we have given are the official figures which have been given by the government of Canada on page 50 of the blue book.

I am not too sure of just what they have done at Castlegar because there is some possibility of flowage on the site where the old lumber mill used to be; that may be put under water. But in the International Joint Commission plans a dike was included to protect the property, and it could be done quite easily. The elevation is not very high at Castlegar, as you know.

Mr. DAVIS: My point was that the flooding at Castlegar and the effect on the people are not included in the statistics about which we are talking right now.

Mr. McNAUGHTON: I could tell you. The experts from the department of northern affairs can give you that information better than I.

Mr. TURNER: Referring to the blue book at page 50, I see:

—the reservoirs required for the maximum diversion proposal would displace 1,580 people—

and then the phrase—

—a number which has no doubt risen since then.

am suggesting to you that it has risen by about 500 since 1957.

I am not bringing in the human factors, although they are very relevant indeed; and I am not bringing in the aesthetic factor, although that is very relevant indeed. However, I am questioning the statistical comparison on your Columbia river development plan diagram, in which I suggest the statistics should eliminate 100,000 acres of existing Arrow lake water. I am questioning merely the statistical relevance of comparing a 1964 figure with a 1957 figure.

Mr. McNAUGHTON: And I am questioning Mr. Turner, the validity of making an argument on a straight comparison of units of area without full recognition of the cultural and human consequences of what you are doing. I am also making the statement again that the figures I have used are the figures supplied in the latest information in the blue book. Whether those figures are relevant and useful remains for others to decide.

Mr. TURNER: On page 11 of your original submission, general, you mentioned that you could not take responsibility for two paragraphs.

Mr. McNAUGHTON: May I crave privilege on that, Mr. Turner, because I made a mistake there. I admitted it right away. I had put that information down and when I came to check it after it was typed—when I was checking every source before making my presentation to you—I found the document from which I took those figures was labelled "For personal information only", and that is why I am not prepared to name the author. I have communicated with the author and I hope he will give some similar information; but in the meantime that was struck out.

Mr. TURNER: The two paragraphs were struck out?

Mr. McNAUGHTON: The two paragraphs were struck out. I do not mind talking about them if you will accept it on the basis of my own authority, but I cannot give you the name of the author.

Mr. TURNER: I did not understand you to say yesterday that you were willing to have that struck. I thought you were just not willing to take any responsibility for those paragraphs. Do I now understand that you are willing to have those two paragraphs struck?

Mr. McNAUGHTON: What I said to the meeting was that I would omit the next two paragraphs because I found that I did not have the consent of the author in question to quote his views, though I hoped to have his permission later. I said that personally I thought it was a very reasonable statement.

I have no authority to quote it; it should not have been there.

Mr. TURNER: It is a little difficult for us to challenge statements if you do not reveal the source. If you do not wish to reveal the source, it should be struck.

Mr. McNAUGHTON: We have struck it; that is what I asked should be done. It was all done at the last meeting.

Mr. DINSDALE: Mr. Chairman, I would like to ask General McNaughton if the Canada plan was ever placed before the United States authorities as an official position by the Canadian-British Columbia negotiating team.

Mr. McNAUGHTON: Mr. Dinsdale, I am not in a position to report that to you, but I do know from my contact with this that it was the accepted position on which the negotiators began to talk. That is borne out by statements which Mr. Fulton made in public.

I think you probably have or have had access to the proceedings of the British Columbia policy committee and the proceedings of the various cabinet committees. I am not at liberty to quote those documents, and I never have done so in any announcement I have made. Sometimes the information has been similar, but I have used information coming to me from other sources—sources which were open.

To answer your question, we would have to obtain the minutes of those committees, and I do not think that could be done. However, I can tell you, because this is of my own knowledge, that in the initial stages sequence IXa was the basis of the Canadian government's view. It was the basis established at a very early time when the present premier of Quebec was the minister of the department of national resources. It was implied, as you will see if you read the discussions which took place in this committee and before the international rivers bill became law. If you read those you will find that most of the policy views I have expressed are derived from that period.

Mr. TURNER: Mr. Chairman, would you permit a supplementary question on that point? Did not the Canada plan—so-called, as adopted, you say, by the Canadian government at that time—

Mr. McNAUGHTON: I did not say adopted. I do not think there is a formal document anywhere which adopts any plan.

Mr. TURNER: Did the plan, as envisaged in those days, include High Arrow?

Mr. McNAUGHTON: In the International Joint Commission there were six sequences worked out. Those which are labelled with simple roman numerals were sequences in which the board put the High Arrow. Those with the "a" opposite them in these books are those where High Arrow was excluded. It is true that the High Arrow was considered. If you look at the international Columbia river engineering board report you will find what they had to say about it. So far as Canada is concerned, the High Arrow added materially to the cost and did not increase the benefits within Canada at all, the implication being that the only benefit we would receive would be from the use of High Arrow in a project in which the downstream benefits of power were to be shared.

Mr. DINSDALE: Mr. Chairman, just pursuing this point a step further, from what General McNaughton has said I wonder whether he could indicate whether or not the United States viewpoint was sounded out with regard to the Canada plan?

Mr. McNAUGHTON: Yes, Mr. Chairman, I think there is no doubt about it; so far as the technical people were concerned at the time we went to negotiation there was no doubt in the minds of my colleagues that the plan was going to be in the form of this sequence IXa. There is a verbatim record taken by court stenographers of the proceedings of the International Joint Commission at a meeting held in New York over a period of several days in which argument went on largely between General Itschner and myself, and in which there was a good deal of determined effort made at that stage to exclude the possibilities of diversion because of the possible consequences to the United States. With the strong support of this committee just before that, and with the full support of the ministers, I made it clear that Canada intended to be and to remain the master in its own house within the rights established by the Boundary Waters Treaty of 1909, and that this plan represented almost the difference between whether we could or could not carry out these developments. Everyone admitted it was a must. That is the basis in which we went forward. It is recorded as a conclusion that the sequence Xa was not to be struck out of the reference to the international Columbia river engineering board; in other words, they agreed it had to stay. Naturally, we did not get them to surrender at that stage. I am sure there are many persons here who know that that view continued without the support of the British Columbia government, but continued to be the policy, as we understood it, of Canada for a very considerable time into the negotiations.

Mr. LEBOE: Mr. Chairman, may I ask a supplementary question of the general? Several references have been made to what was known as Bill No. 3,

the international rivers bill. Did the general at that time support clause 9, I believe, of Bill No. 3 which would have taken the resources from British Columbia and put them under the national government here at Ottawa? I think clause 9 subsequently was deleted.

Mr. McNAUGHTON: The original draft of Bill No. 3 implemented a clause of the British North America Act which made clear that parliament had the responsibility to control waters which flowed across the boundary.

Mr. LEBOE: I think it was clause 9 specifically which stated that under the terms of the British North America Act, the federal government would take over the resources of British Columbia in respect of all international rivers in British Columbia. That was the purpose of the bill. I am wondering whether you supported that at that time.

Mr. McNAUGHTON: No. I have to speak from memory, but I would like to say that I did look at the proceedings of that committee last night, and my memory was confirmed that in the draft of the bill which came forward there was a clause to that effect, yes; but as soon as I saw it I drew it to the attention of the minister and it was eliminated. The first time it became public was before this committee, and Mr. Lesage eliminated that clause.

Mr. LEBOE: It was eliminated after two days of very hard beating by the attorney general of the province of British Columbia. I was there at the time. I wonder whether you supported that view.

Mr. McNAUGHTON: I certainly was not in favour of that extreme measure at that time.

Mr. DINSDALE: Mr. Chairman, my line of questioning is getting a bit disjointed because of these supplementary questions.

The CHAIRMAN: Perhaps we might cut down on the supplementary questions.

Mr. DINSDALE: I would like to refer back to the previous answer. Was it as a result of strong protests from the United States government that the committee of technical advisers recommended to the negotiating team that they back away from the Canada plan, or were there other reasons?

Mr. McNAUGHTON: Mr. Chairman, I am in very great difficulty because these decisions are recorded in cabinet documents. My oath of office prevents my disclosing that information. I was sworn at that time as a member of the privy council, and I cannot answer that question. I submit that if you want the answer, it is a matter of getting the records of those meetings, including the cabinet meetings; there you will find the matters set forth, I believe; but I cannot speak with authority.

Mr. DINSDALE: May I go this far in the questioning: Was there a general agreement in respect of the treaty plan, which you have indicated is a compromise plan, by all concerned in negotiating the treaty.

Mr. McNAUGHTON: Again I cannot speak with authority, but my answer would have been that the measure of agreement that was perpetrated would be superficial.

Mr. DINSDALE: Let us come at it in this way: The government of British Columbia when before this committee indicated that the water resources of British Columbia belonged to that province and that any decisions which were made by the negotiating team would have to be in conformity with the wishes of the province of British Columbia. Would this jurisdictional position, where resources belong to the province, have anything to do with the position which was taken by the negotiating team?

Mr. McNAUGHTON: I have no doubt that the arguments which were put forward by the government of British Columbia were represented, but it is

not for me to say how because those were recorded in cabinet documents so far as I know.

In respect of the views of the government of British Columbia—and, most of this is centred on the High Arrow—I would like to invite the attention to the committee to the evidence given by the attorney general of British Columbia and the comptroller of water resources, namely Mr. Bonner and Mr. Paget, before this committee, at which time they took the most violent exception, and rightly I think, to High Arrow. I did not hear of that evidence being given for a couple of weeks because I was engaged then on the Canada-United States permanent joint board of defence in respect of the defence of the Arctic. I was up there during that time; however, when I came back I saw this evidence, at which time I asked to present a rebuttal, with the authority of the minister, to the effect that Canada had no intention whatsoever of raising the water level in this fantastic scheme at High Arrow. That is recorded in the minutes. That was a statement of policy by the government of Canada against it, which did not agree with the views expressed by the government of British Columbia at that time. As I say, it is on the open record.

Mr. DINSDALE: Mr. Chairman, I have one further question.

Mr. BREWIN: Mr. Chairman, I have a supplementary in respect of what already has been put. I am sorry to interrupt my friend but I wanted to call attention to the fact that my friend, Mr. Dinsdale, was asking you about your views with regard to the respective position of the provincial legislatures and the federal government in respect of this question of decision on these projects. Is that not set out in the second page of your letter to Mr. Martin of September 23, 1963, which already has been filed?

Mr. McNAUGHTON: Could I just check that reference, please? I have had a good many letters from Mr. Martin.

Mr. BREWIN: It is dated September 23, 1963, and I am referring to the second, third and fourth paragraphs on the second page. In my opinion, that answers the question Mr. Dinsdale asked.

Mr. McNAUGHTON: Yes, I think so. I think that is exactly right, Mr. Brewin. Would you like me to read that into the record?

Mr. BREWIN: I would.

Some hon. MEMBERS: Read it.

Mr. McNAUGHTON:

Re your paragraph 3. I do not agree that the government of British Columbia is the government responsible for final selection, by which I understand you mean the ultimate decision. The Columbia and the Kootenay are rivers which flow out of Canada, and, under the B.N.A. Act, Canada, by the International River Improvement Act, has asserted jurisdiction.

In other words, if the occasion so required, unquestionably in my mind, our united country, namely Canada, acting on behalf of all the provinces, has the responsibility and, therefore, is the authority that must give the decision.

Mr. BREWIN: May I ask you to go on and read the next two paragraphs which bear on the same subject?

Mr. McNAUGHTON:

The government of Canada is therefore the final authority and is responsible, at the least, that harm is not done to Canada. These are the words I have heard used by competent legal authority and with which I find myself in complete agreement.

Mr. LEBOE: This is a point reverting to the rivers bill, in which there was a section deleted which, in fact, said exactly what the general said now. But, as I say, it was deleted from the bill and, under the situation as it exists today, British Columbia can be stopped under the rivers bill from doing anything in the way of building dams in British Columbia; but, on the other hand, they cannot force British Columbia to do anything. I think this is a correct interpretation of it, is it not?

Mr. McNAUGHTON: Well, I think that is probably right.

Mr. LEBOE: I think so.

Mr. McNAUGHTON: That section of the bill was taken out, despite the views of the law officers of the crown, I might say. I do not like to get into these legal arguments but, as a matter of practicability—

Mr. LEBOE: I believe it was clause 9.

Mr. McNAUGHTON:—these things require co-operation on both sides. You are in the position that if you cannot reach agreement or do not reach agreement on the various government levels something else must be done. However, I do not think you can say the government of Canada is relieved of the responsibility; I do think it has that responsibility.

Mr. DINSDALE: I have one more question. General McNaughton indicated that in the final stages of the negotiation—and he just used the word “co-operation”—in order to achieve developments of this kind, particularly where you have the problem of jurisdictional dispute between the two levels of government in Canada, it is necessary to have co-operation. Then, there is a further problem of an international jurisdiction nature in respect of these negotiations. After the long period of negotiations would you not say, general—in fact, you indicated this obliquely a moment ago—that the treaty which was negotiated taking into consideration the compromises that were necessary, was agreed to by all concerned.

Mr. McNAUGHTON: I would say to Mr. Dinsdale the document speaks for itself. But, my view has been that under the constitution of this country it is only parliament that can decide these matters; then, if the government signed it and decided to put it forward the treaty would have to go before parliament so parliament could decide. The means by which parliament reaches a conclusion is through this committee. I have maintained always that the treaty, which I consider very damaging, should be referred to this committee for complete analysis and report, and until this committee should decide and the government should ratify there is one critic at least who maintains his position that this is a very bad deal and parliament should know about it.

Mr. TURNER: I have a supplementary question in respect of the history of the negotiations at this stage.

General McNaughton, I think you said—and I think Mr. Higgins has said on occasion—that the Canadian federal negotiators at one stage of negotiation of the treaty put forward sequence IXa or the McNaughton plan but later retreated from it. I would like to ask the general then is it not a fact that the sequence put forward on the occasion in question was not IXa or the McNaughton plan but was always a sequence which included or even featured the High Arrow.

Mr. McNAUGHTON: No, no.

By that time the High Arrow was out of the running. As a matter of fact, instructions were given to the Canadian section to drop this by reason of the objections contained in the presentation to this committee by Mr. Bonner and Mr. Paget. I was very much surprised to find this in the report when it was finally presented to us because I thought it had been eliminated.

Mr. BYRNE: Mr. Chairman, there are several matters which I should like to clear up. General McNaughton has put special emphasis on the aesthetic values of the Arrow lakes district. If we are going to proceed on the assumption that the people of east Kootenay did not consider the aesthetic values I think his argument would have greater strength. I should like to ask General McNaughton whether he has considered the fact that people do operate large tourist resorts on the Columbia river, the Columbia lake and the Wasa lake as well as, since the 1950's, at the development, beyond all comprehension and expectation, of the Windemere lake? Considering the development which has taken place in those three areas for recreational purposes does he believe there is a comparable value?

Mr. McNAUGHTON: Yes, I fully agree that the values in this regard in respect of east Kootenay are similar. The east Kootenay area is very lovely and the tourist attractions are of a type of which there is nothing superior. As far as I am concerned, and the people who have worked with me, those values have been kept very much in mind. I fervently believe, on the basis of the information we have received, that far from doing damage to the east Kootenay area, this project will improve the possibilities of future development.

Mr. BYRNE: Surely it is a matter for the people of the east Kootenay district to decide whether the aesthetic values are going to be the same as those of the west Kootenays.

Mr. HERRIDGE: What about the situation in respect of the High Arrow district; does it not work both ways?

Mr. McNAUGHTON: I am basing my statements on information I have received from people of the area.

Mr. BYRNE: All I am asking you to do, general, is refrain from making decisions for the people of the east Kootenay.

Mr. McNAUGHTON: Mr. Byrne, I am just saying that the proposal which has been put forward by sequence IXa will provide immense benefits to the residents of that area while at the same time there is no need to pick them up and shake them out of their homes. I am convinced they will be able to move to better areas in close vicinity.

Mr. BYRNE: That is not a responsive answer to the question, Mr. Chairman. The people who represented the British Columbia Hydro said essentially the same thing in respect of the people living in the area of High Arrow, but this is a matter of argument. I am just asking the general whether he believes we should place aesthetic values on the east Kootenay district.

Mr. McNAUGHTON: Mr. Chairman, I think Mr. Byrne will realize from conversations he has had with me that I have continued to place aesthetic values on the east Kootenay district, and have given consideration in respect of the economical values to those same individuals.

Mr. BYRNE: I simply wanted that fact to appear in the record.

Mr. McNAUGHTON: Yes.

Mr. BYRNE: Has General McNaughton given any consideration to the amount of wildlife that will be destroyed as a result of the flooding of the east Kootenay? Statements have been made in evidence that this flooding would practically destroy the feeding range of most of the east Kootenay wildlife.

Mr. McNAUGHTON: I think this situation has been fully and appropriately taken into account. This is one of the situations where there exists disadvantages and advantages to all sides.

Mr. BYRNE: Referring to the profile maps, General McNaughton has said that in the event we were to divert the Kootenay through the Dorr and Bull river dams into the Columbia, thereby moving the water to a higher elevation,

the extra power generated through the Mica dam system would provide 360,000 megawatts additional power.

Mr. McNAUGHTON: I think your decimal point is three points out. The additional power would amount to 360,000 kilowatts or 360 megawatts at site in the early phase up to 1985.

Mr. BYRNE: Can General McNaughton tell me what the additional power generated in Canada would be as a result of the 5,500,000 acre foot storage at Libby?

Mr. McNAUGHTON: The 5,500,000 acre feet of storage at Libby can be very important.

Mr. BYRNE: I am asking you how important it is to Canada for generating purposes.

Mr. McNAUGHTON: It has been stated that the increase in available energy, not firm power, on the west Kootenay might be of the order of 200 megawatts. However, if you read the fine print of the treaty, as I did yesterday clause by clause, you will see that after it tells us what this water can do it provides that power in usable form to suit Canadian needs can only be provided subject to agreement with the United States, and the United States is under no obligation to agree if it is going to be in any way damaged. This makes it impossible to generate this power. There is no assurance given to Canada in respect of firm power. It is essential to the concept of firm power that there is an absolute assurance it can be delivered. One cannot make contracts with customers unless you can implement them. When the whole thing has been made subject to an agreement, as it is in the protocol and in the treaty, the decision rests with United States and the United States will not have to assist unless there will be damage resulting to them. Therefore the privilege is useless. In fact, this is not firm power under the definition.

Mr. BYRNE: I understand the difference between the two projects is essentially 160,000 megawatts based on the assumption that this is to be a co-operative development. On the assumption that we are going to have an optimum of co-operation between the two entities, then the difference will be 160,000 megawatts; is that right?

Mr. McNAUGHTON: I should like to say in answer to that question that Mr. Byrne is making a very large assumption.

Mr. BYRNE: I am simply asking a question. I am only making an assumption, not asking for a definitive statement. Assuming there will be maximum co-operation, it is my understanding that the difference will amount to 160,000 megawatts; is that correct?

Mr. McNAUGHTON: You are taking into consideration the canal plant and other additions?

Mr. BYRNE: Yes, and I am referring to the potential development in Canada.

Mr. McNAUGHTON: I take it you are also assuming that they will put in the storage at Duncan lake?

Mr. BYRNE: No. I understand that this does not take into consideration the storage at Duncan lake which will add an additional 60,000 megawatts.

Mr. McNAUGHTON: I would not care to give an affirmative answer to many of these questions which are prefaced by large assumptions.

Mr. BYRNE: Mr. Chairman, all I am asking for is an assumption. I think my next question will clarify this. I want to proceed purely on the assumption that this is a co-operative development and we are accepting figures that would result from a co-operative operation.

General McNaughton, earlier you were speaking about the lack of co-operation from the United States authorities in respect of releasing waters for the benefit of generation in Canada. On page 6 of your brief you say:

It is wise not to be under any delusion as to what Canada may expect from the exercise of this authority by the United States.

This is the authority to lower their storages.

For example, on the Pend d'Oreille where the United States is already in control, physically as well as jurisdictionally, of the upstream storage the flows at Waneta are so reduced in the late summer in the interest of United States system benefits that only one of these Canadian units out of a total of four (three of which have been installed) can be operated.

This is a fair assumption when it is completely understood that there was no agreement between the United States and the Canadian entity as to the flowage from their storages on the Pend d'Oreille system, and that the Consolidated Mining and Smelting Company which would be the beneficiary of this storage had no agreement whatsoever with the United States authorities when they placed the dam in Waneta. Is it quite fair to say that we should expect the same measure of control from this undertaking as from the treaty?

Mr. McNAUGHTON: I have 12 years of pretty sharp experience in dealing with a vast variety of water problems with my good friends in the commission, and I have found that in these dealings you had better be careful that your treaty rights are correct or otherwise it is better not to assert them. If they have a clause in the treaty, maybe not in the same article but in another article, which gives them the right, then they can assert it and insist upon it. I do not object to that in the least. What I object to is that we should be put in the position of asking them for charity in the non-exercise of that right.

As regards Waneta, I would like you to know the background of that, Mr. Byrne, and I think you know it. Cominco went ahead and developed Waneta with the thought that there was no possible reason why they should not build it on their own with the local authorities. When they started construction they discovered that running into the head pond was a small creek known as Cedar creek that had its origin in the United States on some property that was owned by the national government. Despite the fact that there would be flooding across the line into this property, Cominco went ahead and started construction and spent a good many million dollars on it. Then the United States raised the question of the flooding across the boundary which is forbidden by the Boundary Waters Treaty, article V, and Cominco was told they could not do that.

They then applied to the International Joint Commission for an order to permit them to build the Waneta plant. Of course, we naturally tried to do our very best to get the privileges given to Cominco to build this plant, but in the course of the argument with legal counsel, attorneys-general of provinces and of the states appearing before the commission, it was found that the United States authorities had a clearcut case and that under article II of the Boundary Waters Treaty they had the right to control the flow within their own territory. This matter having been raised, the United States insisted on their right to control flows that had been reservoired in the United States and this should be a matter of record in the order that permitted the construction of the Waneta dam. This is perfectly fair; there is nothing unfair about it. You are either right or wrong under a treaty; you either have a privilege or you have not, and if we have not a privilege, then the United States has and you can be very certain that in their interests and loyalty to their own country they are going to exercise it.

Now, what was the small thing that enabled the United States to do that? It was a tiny creek of water flowing through wasteland, joining the Pend d'Oreille about a mile above where the dam was to be. The amount of land in the United States which was going to be flooded when we closed the gates at Waneta and raised the pool to the amount required was 2½ acres of wasteland. The Federal Power Commission worked out the horsepower involved in this little creek and it came to eight horsepower. Nevertheless, we could not get permission to proceed with the construction at Waneta until we recognized the law under the treaty of 1909 which gave the United States unquestioned right under article II under a reservation which had been made before the treaty was made. This was arrived at by both countries. I would like to tell you that I was very anxious about this because I am not a lawyer, so I asked Cominco, when the controversy became acute, to send their lawyer to the commission and I sat him down alongside myself and I took his advice at every turn. This happened to be one of the meetings on the St. Lawrence river held at Cornwall. I asked him to go down to Montreal and consult with his head office before the Canadian Commission would agree to this order. The answer we got from them was that they were anxious to get ahead with the plant and therefore would consent to this. We therefore put the order through. This establishes a tremendously important matter, on the basis of an infinitesimal right, that the upstream state has the right to reserve under article II of the treaty the right to store water and make any use they want of the waters thereafter either by diversion or otherwise. This is what is being given away in this treaty.

Mr. BYRNE: I am not finished with my questions.

Mr. McNAUGHTON: I also have more to say, Mr. Chairman. I have here the submission.

The CHAIRMAN: General McNaughton, you are too popular; too many questions are asked.

Mr. McNAUGHTON: They are apt questions and I should like to stay all day with this.

The CHAIRMAN: Mr. Byrne, would you permit Mr. Leboe and Mr. Davis some supplementary questions?

Mr. BYRNE: I should like to question General McNaughton on this very question of the joint commission's authority.

Mr. McNAUGHTON: I would like to tell you about the consequence of this. I have here the submission made by Cominco to the energy board, and it shows the regulation upstream on the Pend d'Oreille which came from the International Joint Commission order.

Mr. BYRNE: What was the question before the International Joint Commission? Was it the right to upstream power, to use their flowage as they saw fit for their own generating purposes, or was it to determine the right of diversion? The authority that you wrote in was the right to divert, while they agreed to the flooding of those three fifths of an acre.

Mr. McNAUGHTON: No, it was two and two fifths acres.

Mr. BYRNE: I understood it was around three acres, yes. When they permitted the flooding of those three acres, they also wanted the assurance that the right to divert would still remain. There was no question about how much water would be allowed to go over their dams at specific times.

Mr. McNAUGHTON: What the United States required before they would proceed to give us consent to any flooding, including the flooding from Cedar creek, was a reassurance that under article II of the Boundary Waters Treaty they had the right to control and divert. That is a matter of law which was put before us by eminent counsel in very long proceedings. It is available at

the International Joint Commission Office, and is very interesting from a legal point of view, especially in respect of the argument.

Mr. BYRNE: When Cominco decided to build a dam, they made no reference to the International Joint Commission, they asked for no privilege from the United States, but they simply built the dam and intended to use the flow as it came down. They were not asking the United States to regulate their water at that time.

Mr. McNAUGHTON: That is right. I have no doubt that it is right.

Mr. BYRNE: That is the difference between this project, that is, the Waneta project, and the Pend d'Oreille storage. There was no agreement, no obligation, and no co-operative development whatsoever. Whatever the decision of the International Joint Commission it was simply in line with the Boundary Waters Treaty.

Mr. McNAUGHTON: It was purely a statement that this was the law.

Mr. BYRNE: I have further questions.

The CHAIRMAN: Could we have a supplementary?

Mr. LEBOE: I have a supplementary question. Is it not true that the present treaty makes it clear that there is going to be no diversion of the Pend d'Oreille river because of the treaty itself, and the fact that it would be allowed under the treaty of 1909?

Mr. McNAUGHTON: No, quite the contrary is the case. Under article II of the Boundary Waters Treaty there is no restriction placed on the United States.

Mr. LEBOE: They reserved the right to divert.

Mr. McNAUGHTON: Yes, the same as we have done.

Mr. LEBOE: Under this treaty there is to be diversion only for consumptive uses, so we have gained something on the Pend d'Oreille river now which we did not have under the 1909 treaty.

Mr. McNAUGHTON: Oh no, quite the opposite.

Mr. DAVIS: My question is along the same line. The United States did threaten—to use a word which may not be fully appropriate—to divert for power purposes. They did threaten to divert from the Pend d'Oreille within the United States and to drop it into the Columbia in the United States. Is that not true?

Mr. McNAUGHTON: That is true, but that was at an early stage.

Mr. DAVIS: Under article II of the treaty that exists, I mean under the 1909 treaty, they had that right.

Mr. McNAUGHTON: They still have it.

Mr. DAVIS: When this treaty becomes law they cannot exercise that right in respect of power diversion. Is that right? Therefore the present treaty as envisaged limits them in respect of that kind of diversion?

Mr. McNAUGHTON: No.

Mr. DAVIS: In other words, you cannot have a repetition of that right?

Mr. McNAUGHTON: Again this has to be considered in its environment. Now, what is the situation? Under this proposed treaty there is the unlimited right to divert for consumptive purposes. We cannot exercise that right on the Kootenay water in respect of any project which is a multiple purpose project for power and flood control. Now, the Secretary of State for External Affairs stated that he is convinced that any power we developed or used in relation to bona fide diversion for consumptive purposes would be incidental and would not bar that right.

That is very strong opinion of assertion and we hope it is right. But that is not the view held by a great many people. So we are in some difficulty.

When you come to the right to divert for consumptive purposes in the United States there is very little power; it is only incidental and a moderate quantity of water that is likely to be so used above the Grand Coulee dam, and it is likely that the commitment of water we would be giving would be for the arid areas to the south and west. Now this is where we are in a very bad position, because as of now, or at any time, the United States, particularly under this treaty, is entitled to build or divert for consumptive purposes, and this becomes recognized under the principle of first in time, first in right which is coming to be used.

Now, as I have told you, our offset to that is the right to divert and take water out of the Kootenays. I think, with Mr. Martin, that we have probably maintained the legal right to do it. But what is the use of a legal right if your physical capacity to do it has gone? Because you will never be able to develop the storage economically which is required. Moreover, the United States engineers were well aware of what they were doing when they got us into this predicament in which we find ourselves at the moment.

Mr. DAVIS: You are saying that the United States would never again contemplate a diversion for purely power purposes of the Pend d'Oreille.

Mr. McNAUGHTON: They have everything they want as far as power development goes. And as for the tunnel scheme which has been exhaustively studied, we have had it studied too, and it is quite uneconomic. It is better for them not to have that 440 feet of head on the Pend d'Oreille available for development than to go to the terrific expense of putting in these alternatives of which you spoke. But there is one way it could be improved quite readily of course, and that is when we allow them to build an extra 150 feet of head at the Libby dam, so as to use the full level of Libby above Bull lake, not Bull river, which runs across to the south, and where it is actually possible to take water out of the Libby dam. This would permit them to store by gravity, but I am not saying that that is the way they do it, because there is a cheaper way to do it. So these diversions for consumptive use in the United States are unrestricted, and they are perfectly legal once we have given them the authority to operate the Libby dam and to put that water in storage; they are lawful diversions and they cannot be challenged as probably lawful dams in the future. So I say we are in a very, very, dangerous position.

Mr. BYRNE: The supplementary question has got away entirely from the point of my question. My question dealt with the statement that General McNaughton has made about being able to obtain co-operation from the United States entities or authorities. We were dealing with the question of the United States authorities damming the waters from Pend d'Oreille, and then General McNaughton got into the question of insisting upon a diversion right. That is all well and good. But I want to come back to this question of co-operation.

Did not the Consolidated Mining and Smelting Company endeavour to obtain some seven years ago a power interconnection with the Bonneville Power Corporation which would have the effect of generating more power at Waneta, and of the United States controlling the flow of water from the Pend d'Oreille system which would have made greater use of the flows from that area? But after all, if you have not the generators, you cannot generate.

Mr. McNAUGHTON: The answer is in the affirmative, but I must tell you something else. You do not get privileges in this storage in dealing with the United States. I am not criticizing. I think it is perfectly right that there be a sharp protest, and that they insist upon the rights of their country. We respect those rights. But within those rights we have never had any difficulty

in the International Joint Commission in working out viable deals. This is not criticism of the United States; it is respect for them.

What were they to obtain? Under the International Joint Commission order which governs the levels of Kootenay lake, the application for the right to raise the levels of the lakes was made by Caminco many years ago. The International Joint Commission agrees that by raising these levels you back up water across the boundary into Idaho.

Mr. BYRNE: I am sorry, general, you misunderstand my question.

Mr. McNAUGHTON: This is necessary background. I cannot answer the question you asked without giving some of the background. Either I give it to you or not, whichever you like.

Mr. BYRNE: My question did not deal with that.

Mr. McNAUGHTON: What I am saying is germane to your question.

As a result of that, the International Joint Commission agreed to the raising of the levels of Kootenay lake on the condition that the narrows in the river at the outlet to the lake would be excavated so that the high flows could be got off without backing up to Idaho. A very satisfactory, workable agreement was arrived at.

Because Caminco paid for the damages and took these preventative measures at very considerable cost, they were given the right to regulate the flows of the lake within certain defined limits—limits defined by the International Joint Commission. This storage is a very valuable right.

What would have happened in this request for an interconnection agreement which would have given them power in the late summer—I think it was August, September and October—when the United States were cutting off the flows of the Pend d'Oreille to fill up the Hungry Horse reservoir, would have been that it would have given them some power from the Bonneville system, where there was a great surplus at that time, in return for Bonneville getting the effective control of the regulation of Kootenay lake during the winter time when the extra storage for winter power is four or five times as valuable.

This deal was not a matter which was dealt with by the International Joint Commission, but we had to point that out.

I do not know whether the order of the energy board is in effect or whether it is not; I only have here the brief that was submitted. However, I do say that if the interconnection agreement has been approved, then the effective control of the regulation of Kootenay lake is in the hands of the Bonneville power administration just as the effective control of the regulation of Duncan lake and of our other storages is in their hands. So it is a two-headed story.

Mr. BYRNE: People who are operating this power system would be in all probability the ones to determine the best use in so far as power development is concerned and storage on the lakes, would they not?

Mr. McNAUGHTON: No. I read to you those articles very carefully yesterday. It is frequently pointed out that there is a great deal of energy available on the west Kootenay. As of now there is a lot of additional energy there. But when you come to the fine print in the document you find there is nothing said about the division of that energy. What is said is that they are able to make an arrangement provided the United States are not hurt.

My forecast—which I have given in my papers and which I believe to be true and which I have based on every consideration of general system management and so on—is that the regulation upon which the United States will insist under these orders is a similar regulation to what they have in fact put into effect in regard to Pend d'Oreille. If they take that view, it would be a very unwise thing to build these additional plants until there is an as-

surance that the operation would be suitable; and there has been no such assurance.

Mr. BYRNE: When the Consolidated people are here we can ask them.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): General McNaughton, as far as I understand the situation, the right to build the Libby dam is one of the key factors in determining the selection of a sequence in the development of the Columbia.

Mr. McNAUGHTON: I would say that is the case. The United States authorities are anxious to build Libby dam not for any particular benefits they will obtain from it but because, for all time to come, it means in effect that they will have the same situation on the Kootenay as they have at Pend Oreille—the upstream state with all the rights and privileges under the treaty of 1909, rights which are of course of value in the present but which will be of many many times that value in the future.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Thank you.

Do you happen to know, General McNaughton, of any point in the negotiations at which the United States authorities evinced a willingness to forgo the construction of the Libby dam?

Mr. McNAUGHTON: Yes, Mr. Chairman, in the proceedings of the International Joint Commission and the many discussions upon it, it became evident that there was a very strongly divided view as to whether Libby dam was the proper project to build in the general interests either of both countries or of the United States itself. In the first case, the Libby dam is an immensely expensive project; its capital cost in the latest estimates is forecast at somewhere in the order of \$350 million, which includes the gratuitous contribution of Canada of something of the order of \$14 million for the upstream end of that reservoir, without which Libby is completely uneconomic. It would only have 190 feet ahead as against 340 feet otherwise.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would you say, General McNaughton, that the willingness at a certain point to drop the Libby dam was an indication of great anxiety on the part of the United States authorities to get a treaty signed?

Mr. McNAUGHTON: The United States representatives in the commission recognized in the long argument that was carried on that sequence IXa—

Mr. TURNER: May I raise a point of order, Mr. Chairman? Are we talking about negotiations in the International Joint Commission or negotiations for the treaty?

Mr. McNAUGHTON: Mr. Cameron asked me for my personal knowledge. I can give my personal knowledge in respect of the discussions in the International Joint Commission but I cannot do so in regard to the negotiations.

Mr. TURNER: So you are speaking about the International Joint Commission?

Mr. McNAUGHTON: Yes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would you be surprised, General McNaughton, if I were to tell you that no later than yesterday morning in Washington Senator Mike Mansfield of Montana, an extremely influential member of the Senate's external relations committee, informed me that he himself—

The CHAIRMAN: Just one moment, Mr. Cameron.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): He informed me that he himself—

Mr. TURNER: Mr. Chairman, on a point of order—

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): He himself, although he is the senator—

The CHAIRMAN: Mr. Cameron, just one moment, please.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): —from the state which will be benefited by the construction—

Mr. TURNER: Mr. Chairman, on a point of order—

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): —of the Libby dam—

The CHAIRMAN: Mr. Cameron, will you please wait a moment?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): —has indicated his acquiescence in dropping the Libby dam.

The CHAIRMAN: It seems to me there is a point which came up last evening at the meeting of the steering committee; that is, to what extent are members of this committee, 35 in number, authorized or entitled to furnish evidence themselves which is not the subject of cross-examination. The point really came up in respect of a telegram which I read at the request of my good friend Mr. Herridge. I think it was the right thing to do. Mr. Herridge pointed out that a telegram had been addressed by some union to the Chairman and to the members of the committee, and as such it would be proper and fitting that it be read to the members of the committee. It was a short telegram and I read it. However, on reflection, I considered the consequences of this kind of action by the Chair. It would mean that hereafter any member, or person, or interested party, who cared to put in evidence in our proceedings—which now become matters for consideration by parliament—simply could furnish a telegram or communication addressed to all members of the committee, and thereafter have the Chairman, through this medium, put that on the record.

I do not wish to be too legalistic in respect of this, but surely the proper way in which to conduct this inquiry is to have persons like General McNaughton, who are good enough to do so, come here to be questioned themselves. In some proper manner we must establish the proposition that members themselves cannot put on the record evidence which cannot be the subject of cross-examination.

Mr. HERRIDGE: Perhaps we could invite Senator Mansfield to appear.

The CHAIRMAN: If Senator Mansfield or anyone else wishes to come here, we would afford them a most courteous hearing. I do not wish to prevent my friend bringing out what he wishes, but I do not think this is a fair way of putting evidence on to the record. I think it offends the hearsay rule and the right of each member of this committee to cross-examine, in some fairness, any statement of anyone who does not appear.

Mr. BREWIN: Mr. Chairman, I must say that you present this in a very fair manner, and I hesitate to question your ruling. However, surely in the hearings of this committee from time to time ex parte statements and reports have been put in. I remember hearing Mr. MacNabb telling us a lot of things based on hearsay information given to him. Surely the Secretary of State for External Affairs did that; he stated opinions which had come to him from other sources which might or might not be substantiated later.

Mr. RYAN: He was qualified as an expert.

Mr. BREWIN: Do I have to be interrupted?

Mr. RYAN: Yes.

Mr. BREWIN: I would suggest Mr. Ryan have the ordinary courtesy.

The CHAIRMAN: I would like to hear you and any others on this point. Go ahead.

Mr. BREWIN: Thank you.

I would like to suggest it is a proper form of questioning at some point to ask, do you—the witness—accept that proposition? It is not of any great value if the witness does answer the question if the original assertion has no real evidence behind it; but as a proper means of eliciting opinions from various witnesses, the statements, be they in reports or otherwise, are acceptable. I would like to put to the witness something Mr. Lesage said. I do not know whether or not we need call him here to say whether or not he agrees with it. Surely that is a proper method of proceeding. We should not be too legalistic in trying to get to the reasoning in this matter.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): It has been stated recently that the United States was insisting on the Libby dam; that this was one of the key factors they were demanding. I wanted to find out from our witness, in view of his knowledge of the attitude of the United States—members of the International Joint Commission who had direct knowledge—and from the knowledge he must have had—whether he would be surprised to know there had been a period when the United States was not insisting on that. I, myself, went to Washington to obtain some information on this. I put this in the form of a question to the general in an effort to see whether it fitted into his concept of the attitude on the part of the United States in respect of Libby dam.

The CHAIRMAN: Is there anything further on this point?

Mr. TURNER: I would suggest there is quite a distinction between the questioning of a witness who is giving evidence in respect of his own part in negotiations for which he can take immediate responsibility and even bring in hearsay evidence to which he was a party in the course of negotiation and, on the other hand, introducing evidence such as Mr. Cameron is attempting to introduce, which is quite beyond the scope of the particular competence of the present witness in the sense that he was not a party to the conversation with Mike Mansfield of Montana. I do not think it is proper for a member of this committee to be able to introduce hearsay testimony, beyond the jurisdiction of this committee, either by way of a telegram which he reads out, or by way of a telephone conversation—

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): There was no telephone conversation. It was an interview with Senator Mansfield at the capital, Washington, yesterday morning.

Mr. TURNER: The reporting of a conversation which is beyond the realm of cross-examination by the members of this committee is an unfair way of introducing evidence for the scrutiny of the committee. I would suggest that the ruling of the Chairman be upheld on this particular question.

Mr. PUGH: I would suggest that Mr. Cameron reword or rephrase his question and get it in in another way.

The CHAIRMAN: In anything I have said heretofore I have not indicated I am not sensible in respect of the point Mr. Brewin has made. We are not, of course, a court of law, and are not bound by strict evidentiary principles. However, I wonder whether Mr. Cameron would co-operate and not actually produce evidence of this type.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I have finished now, Mr. Chairman.

Mr. KINDT: There is nothing that a good meal cannot correct. I suggest we adjourn.

The CHAIRMAN: If that is agreeable, we will adjourn at this time. It has been suggested that we not subject the general to too lengthy meetings. he has been here for two and a half hours now. We will adjourn until tomorrow morning at nine o'clock.

HOUSE OF COMMONS

Second Session—Twenty-sixth Parliament

1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 11

WEDNESDAY, APRIL 22, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESSES:

General the Honourable A. G. L. McNaughton; Mr. J. K. Sexton, Director,
Civil Engineering, Montreal Engineering Company Limited

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|------------------------|--------------------|----------------|
| Brewin, | Fleming (Okanagan- | Macdonald, |
| Byrne, | Revelstoke), | MacEwan, |
| Cadieux (Terrebonne), | Forest, | Martineau, |
| Cameron (Nanaimo- | Gelber, | Nielsen, |
| Cowichan-The Islands), | Groos, | Patterson, |
| Cashin, | Haidasz, | Pennell, |
| Casselman (Mrs.), | Herridge, | Pugh, |
| Chatterton, | Kindt, | Ryan, |
| Davis, | Klein, | Stewart, |
| Deachman, | Langlois, | Turner, |
| Dinsdale, | Laprise, | Willoughby—35. |
| Fairweather, | Leboe, | |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee.

CORRECTION (English copy only)

PROCEEDINGS NO. 3—Thursday, April 9, 1964

In the Minutes of Proceedings and Evidence—

Page 164, line 12 should read:

“... the downstream benefits from west Kootenay plants in Canada. . .”

Page 165, line 13:

For “is turn” read “in turn”.

Page 165, line 14:

For “was from” read “has from”.

Page 165, lines 26 and 27, should read:

Mr. RYAN: Do they not now have an established right to divert upon payment for damages caused downstream, determined according to their law, when they exercise their right?

PROCEEDINGS NO. 4—Friday, April 10, 1964

In the Minutes of Proceedings and Evidence—

Page 233, line 27:

For “20,000 acres” read “40,000 acres”.

MINUTES OF PROCEEDINGS

WEDNESDAY, April 22, 1964

(18)

The Standing Committee on External Affairs met at 9.00 a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Messrs. Brewin, Byrne, Cadieux (*Terrebonne*), Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Fairweather, Forest, Gelber, Groos, Haidasz, Herridge, Kindt, Laprise, Leboe, Macdonald, Matheson, Nesbitt, Patterson, Pennell, Ryan, Stewart, Turner (23).

In attendance: General the Honourable A. G. L. McNaughton; Mr. James Ripley, Editor, Engineering and Contract Record Magazine.

The Chairman stated that a letter had been received from the United Fishermen and Allied Workers' Union, Vancouver, asking permission to present a brief to the Committee. The Chairman suggested that it might be possible to hear representatives of this organization on Friday, May 1, 1964, when two other unions will appear. After discussion, this question was referred to the Subcommittee on Agenda and Procedure.

Mr. Ryan asked that certain corrections be made in the evidence of the Committee meeting of Thursday, April 9, 1964 (*Issue No. 3*) and Friday, April 10, 1964 (*Issue No. 4*). The members agreed to the corrections. (*See page 528*).

The committee resumed questioning General McNaughton.

The questioning continuing and General McNaughton having advised that he would not be available to the committee in the afternoon, it was agreed to hear Mr. J. K. Sexton of Montreal Engineering Company Limited this afternoon and to resume questioning of General McNaughton tomorrow morning.

At 11.00 a.m. the committee adjourned until 3.30 p.m. this date.

AFTERNOON SITTING

(19)

The Committee reconvened at 3.30 p.m. this date, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Byrne, Cameron (*Nanaimo-Cowichan-The Islands*), Chatterton, Davis, Deachman, Dinsdale, Forest, Gelber, Groos, Haidasz, Herridge, Kindt, Laprise, Leboe, Macdonald, Matheson, Nesbitt, Patterson, Pugh, Ryan, Turner, Willoughby (23).

In attendance: From Montreal Engineering Company Limited: Mr. J. K. Sexton, Director, Civil Engineering; Mr. M. Wilschut, Senior Design Engineer.

The Chairman introduced the witnesses and Mr. Sexton presented the comments of the Montreal Engineering Company Ltd. on the Columbia River Treaty and Protocol, and was questioned.

The committee directed that maps and charts referred to by Mr. Sexton be printed as part of the Minutes of Proceedings. (*See Appendix M-1 to M-16.*)

During the meeting the Vice-Chairman, Mr. Nesbitt, took the Chair.

At 6.00 p.m., the committee adjourned until 10.00 a.m., Thursday, April 23, 1964.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

WEDNESDAY, April 22, 1964.

The CHAIRMAN: Gentlemen, I see a quorum. I beg to report that I have a letter from the United Fishermen and Allied Workers Union asking to submit a brief to the committee. It has been suggested that they appear on Friday, May 1, along with the other two unions which have requested to appear, the United Electrical Radio and Machine Workers of America and the International Union of Mine, Mill and Smelter Workers of Toronto.

Mr. HERRIDGE: Mr. Chairman, are there three unions scheduled for that day? The time allowed for them is far too short because they have prepared excellent briefs with the assistance of competent people, and in my opinion it will take a day for each one of the unions to present its case and to be properly questioned. I suggest three unions are far too much for one day. To bring these people here and keep them waiting for three or four days would not be fair.

The CHAIRMAN: So you feel that Friday, May 1 should not be considered now?

Mr. HERRIDGE: They should be asked to come at a later date, if possible.

Mr. BYRNE: Could I have the names of the three unions, please?

The CHAIRMAN: We have scheduled for that day the United Electrical Radio and Machine Workers and also the International Union of Mine, Mill and Smelter Workers.

Mr. BYRNE: Mr. Herridge may have some information that we do not have as to the size of their briefs. Perhaps the briefs are of such length that we would be unable to hear them on that day.

Mr. MACDONALD: Could I suggest that they have to deliver their briefs seven days in advance? If we find they are voluminous, then perhaps we could re-schedule them for a different date. However, I do not think that at the moment we should waste time on this. I think we should go ahead and schedule the three of them for one day, and if it turns out that one or two should be put off, we can arrange to do that a week in advance.

Mr. DAVIS: In addition to the bulk of these briefs their content should be scrutinized as well. Many of these briefs may be purely repetitious or advance many of the same viewpoints that have been advanced previously, and therefore we should not take them as they come.

Mr. HERRIDGE: Possibly it would be wise to wait until we obtain copies of the briefs. I just happen to know, because they informed me, that they are quite substantial.

The CHAIRMAN: I certainly would not want to cut any important witness short, but I do not wish to have people here unduly at considerable expense. On the other hand, I think we would as a committee like to insist that people make their submissions as we requested. Today is April 22 and we have not yet received a brief from any of these unions, which may compel us to re-schedule the whole series.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): It would seem to me that we are again beginning to compress the meetings in the way to which

I objected before. We have to realize we are not pressed for time. We should spread our meetings out a bit, and that would solve many of these problems about briefs.

Mr. PATTERSON: It seems rather strange that Mr. Herridge has all this information and yet the Chairman and the clerk of the committee have not received any information on this matter.

The CHAIRMAN: In any event we do have these two unions scheduled for this date.

Mr. HERRIDGE: You mentioned three, sir.

The CHAIRMAN: Two, and this would be the third. You still feel three would be too much?

Mr. HERRIDGE: Far too much. We need a day for each one of these unions. They represent Canadians who are concerned with this problem; they represent men producing the wealth of this country.

Mr. BYRNE: Let us not have another lecture. This is a recommendation; let the committee vote on it or amend it and make a decision. If this is a recommendation of the steering committee, I should like to have it put before the committee as such and if someone wishes to move an amendment, that is their privilege.

The CHAIRMAN: The order in which we have arranged to hear those witnesses was: the United Electrical Radio and Machine Workers of America on Friday, May 1, and up to this date there has been no evidence of their brief in spite of the fact that they have received instructions as to the conditions that were imposed by this standing committee, and also on May 1, the International Union of Mine, Mill and Smelter Workers of Toronto. We have not received a brief from this union either.

Mr. HERRIDGE: We should advise them to hurry along.

Mr. DAVIS: Has there been any thought given to a cut-off date after which a brief would not be accepted?

Mr. MACDONALD: Presumably if members of the committee do not have a brief seven days in advance, the witnesses cannot appear.

Mr. BREWIN: This is a silly rule, proving sillier every day. We did not have a single case where people presented their briefs seven days before they appeared.

Mr. MACDONALD: It would have been much easier to have had this document we have here seven days in advance as we could have had time to examine it in advance. We can make committee discussions much more relevant if people who, for three years, have been asking to appear get their thoughts officially together to let us have them seven days in advance.

The CHAIRMAN: Would this conversation not be more usefully continued by our steering committee? I might tell you the clerk of our committee has been extraordinarily careful to communicate with each interested party the day on which we were advised of their interest, and each person wishing to appear was furnished with our ground rules, and yet heretofore we had not received any of these briefs.

The first name on my list is Mr. Ryan.

Mr. KINDT: Are we going to follow a list that way? I have not been able to ask a question for two days. I would like to have my two days put into one.

The CHAIRMAN: I will put you on my list right now. I never had any indication you were interested before; you never told me.

Mr. RYAN: Mr. Chairman, I should like to ask the general some questions pertaining to flood control. However, first of all I would like to ask your permission and the permission of the committee to make some changes in the

record. Starting with the Minutes of Proceedings and Evidence No. 3 of this committee on Thursday, April 9, 1964, at page 164, in the second line of my third question the words, "from west Kootenay in western Canada" should read "from west Kootenay plants in Canada".

At page 65 in the first line of my third question the word "is" before the word "turn" should be "in", so that it would read "in turn".

In the second line of this question the word "was" before the word "from" should be "has", so that it will read "has from".

The fifth question on page 165 does not in my opinion make sense. I probably fumbled it in some way and I am not blaming anyone. What I intended to say is, so far as I can reconstruct it at the present time, as follows: "do they not now have an established right to divert upon payment for damages caused downstream, determined according to their law when they exercise their right".

Coming now to the Minutes of Proceedings and Evidence No. 4 of this committee for Friday, April 10, 1964 at page 233, in my first question which was a long one and had a quote, at the end of the quote, the first line reads: "I understand that it was estimated that there would be 20,000 acres flooded". This should read, "I understand it was first estimated that there would be 40,000 acres flooded". Those are the changes that I would request permission of the committee to make.

Mr. Chairman, I should like to ask General McNaughton whether it is not true that the flood control plans that are set forth in annex A of the treaty apply only to 8,450,000 acre feet of storage and only for the first 60 years after ratification.

Hon. A. G. L. McNAUGHTON: I would say, Mr. Ryan, that under the basic operating arrangements 8.45 of the 15.5 million acre feet of what is styled the Canadian storage is located to control floods under normal conditions. That particular storage control is to be operated under the provisions that come in several parts of article IV of the treaty supplemented by the provisions in annex A.

Mr. RYAN: Is not paragraph 5 of annex A restricted solely to the 8.45 million acre feet?

Mr. McNAUGHTON: I do not believe so.

Mr. RYAN: May I direct your attention then to paragraph 5 of the annex at page 146 of the blue paper? About two thirds of the way down you will read:

After consultation with the Canadian entity the United States entity may from time to time as conditions warrant adjust these storage reservation diagrams within the general limitations of flood control operation.

Further down, in the last line you will read as follows:

The general limitations of flood control operation are as follows:

These limitations apparently pertain to Mica, High Arrow and Duncan. In each case the exact amount of acre feet is specified.

Mr. McNAUGHTON: What I have tried to make clear in my presentation is that the arrangements for flood control fall into three categories. The first is the operation of the 8.45 million acre feet of allocated storage, to which Mr. Ryan refers and which is governed in part by the paragraph from the proposed protocol and treaty which he quotes.

In addition to that, during the life of the treaty there is provision that the United States can call for the operation of any additional storage in the basin. The intention was that that should be in the event that they forecast flood of unprecedented magnitude, but it appeared in the treaty in a different form.

Mr. RYAN: My point is that that comes in a different category.

Mr. McNAUGHTON: It is in the provision for flood control.

Mr. RYAN: Paragraph (5) does not apply to that.

Mr. McNAUGHTON: When you get to the—

Mr. RYAN: Excuse me a moment, general. Article VI, clause (3) states:

—electric power equal to the hydroelectric power lost by Canada as a result of operating the storage to meet the flood control need for which the—

And here I insert the word "emergency".

—call was made . . .

I take it, therefore, that immediately they make an emergency call they have to replace the lost power coincidentally.

Mr. McNAUGHTON: But, Mr. Ryan, that is only one aspect of the protection of Canadian interests, as I have explained line by line and clause by clause in the presentation which I gave to you. It is only one aspect of paying back the whole of this.

The whole of this business is directed toward transferring the burden of operation of storage and the disadvantages of operation of storage from the United States to the Canadian people. That is something that should be resisted when the operation of the storages exceeds certain quantities that can be taken into account without undue ill effects on our own country.

Mr. RYAN: My point is that there are limits upon this and we have them spelled out in the treaty. We do know what they are.

Mr. McNAUGHTON: The article which governs the additional operations of which I have spoken is article IV (2) (b) of the treaty, which has been reproduced on page 61 of the green book:

- (b) operate any additional storage in the Columbia river basin in Canada, when called upon by an entity designated by the United States of America for that purpose, within the limits of existing facilities and as the entity requires to meet flood control needs for the duration of the flood period for which the call is made.

I say to you with the greatest seriousness that the compensation which is provided for in article VI in relation to the supply of power is only one minor part of the disadvantage.

I might make that a little more clear and say—

Mr. RYAN: But, general, we have a further limitation in the protocol in paragraph 1, do we not, in the 600,000 cubic feet per second discharge at The Dalles in Oregon?

Mr. McNAUGHTON: The 600,000 cubic feet is the secondary objective which was set by the United States authorities for control. The primary objective, as I explained, was 800,000 cubic feet, which is a much easier objective to meet and which, incidentally, is the objective which, if reached in a flood of the magnitude of that of 1894 would save the United States areas practically harmless in their existing state of development.

What paragraph 1 of the protocol does is to shift the objectives of operation from 800,000 cubic feet, which is a comparatively simple objective which can be achieved without extravagant use of the Canadian storages, to an objective much more difficult to realize and one requiring a very substantial increase of storage use in order to do it.

If you read on to the later phases of the protocol you will find that even the limitation to 600,000 acre feet has disappeared in a general state—

Mr. MACDONALD: Where does it say that, general?

Mr. McNAUGHTON:—which would operate for any objective that the United States authorities choose to set.

Mr. MACDONALD: Where does it state that?

Mr. BYRNE: In the meantime, Mr. Chairman, can you inform the committee to whom we are indebted for the newspaper cutting which has been distributed bearing the caption, "Who is telling the truth"?

Mr. HERRIDGE: I distributed that at the request of a very excellent lady in Victoria, Mrs. Davidson.

The CHAIRMAN: We are grateful to you, Mr. Herridge.

Mr. HERRIDGE: I believe Dr. Davis has had a great deal of correspondence with her.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Does the lady have to be known to Dr. Davis before it can be admitted as evidence?

Mr. McNAUGHTON: I would like in answer to Mr. Ryan to refer to the protocol and particularly to page 111 of the green book.

Paragraph 1 deals with the operation of the additional storage—not the 8.45 because that is operated in any event. This is the additional storage.

The objective which was originally discussed before this protocol appeared was an objective which would be comparatively easily reached, an objective of 800,000 cubic feet per second.

Mr. RYAN: But that was not spelled out in the treaty?

Mr. McNAUGHTON: No, it was not spelled out.

Mr. RYAN: Anyone reading it would not know it at all.

Mr. McNAUGHTON: That is one of the things in which I think the treaty is fundamentally wrong.

Mr. RYAN: The United States authorities at that time could have made an arbitrary call, in the opinion of many, against which we could not stand?

Mr. McNAUGHTON: I am familiar with this.

Mr. RYAN: This was one of your valid points.

Mr. McNAUGHTON: Yes, and it disappeared in the treaty.

Mr. RYAN: You have it in the protocol—600,000 cubic feet.

Mr. McNAUGHTON: Six hundred thousand cubic feet is an objective of such a nature that it would require a very considerable amount of storage in order to meet it.

Mr. RYAN: We get the equivalent in hydro power, so why should we worry about it?

Mr. McNAUGHTON: I will tell you that in a minute.

Mr. RYAN: This is what I want to know.

Mr. McNAUGHTON: May I answer your question in an orderly way? This is an important point.

May I repeat that the objective set in the protocol is an operation of all our storages to 600,000 c.f.s. When you come to consider the operation of our storages after the expiration of the treaty you will find that dealt with in article IV (3) of the treaty, but with an unlimited objective in place of having a limited objective—which we can do. In case of dire necessity and urgency for the protection of the United States, it is perfectly right to help them. But it is not right to help them to a point which is absurd, merely to let them gradually build their properties out into the flood plain of the river, increasing the hazard to flood control, and setting up a mounting call upon us which may be unlimited.

It is not a question of recompense for power. That is a minor matter in this, I assure you. Look at what the protocol does to us in paragraph 2, the reference to article IV (3) of the treaty, dealing with this period after the treaty expires. You will find that the defined objective which limits our commitment is entirely eliminated, and the objective is now giving the amorphous words "to be adequately controlled". Now, what do you mean by "adequately"?

Mr. RYAN: We are getting a long way from what I started out with.

Mr. McNAUGHTON: Yes, but what I have said is relevant to the answer to your question.

Mr. RYAN: That is an argument I would like to deal with at another time. I think you are stretching and straining your meanings considerably. However I would like to come back to that at another time. For the present I address myself to paragraph 5 of annex A and the question of the 8.45 million acre feet of storage for flood control. That is regulated storage apart from any emergency claim. We get advanced payment of 64,400,000 for this annual service for 60 years, in United States funds.

Mr. McNAUGHTON: That is correct.

Mr. RYAN: I further understand that most of this accrued, this 8,370,000 acre feet, is provided by Mica—oh no, by High Arrow rather, where there will be no generators; and also at Duncan where very little power will be generated. Is that right?

Mr. McNAUGHTON: It is not quite right. The storages in the treaty are located substantially as you say, but in the protocol there is the possibility of a variation so that flood control which is assigned to High Arrow can be transferred to Mica provided the two parties agree.

Mr. RYAN: It might be a very wise stipulation to have that possibility in there.

Mr. McNAUGHTON: I have always maintained in the International Joint Commission whenever I got an opportunity to speak to the negotiators at any time that the bargain which Canada made, the arrangement in the treaty, should not specify the particular storages from which either flood control or power release is to be drawn, and that our bargain should be that what we do above the boundary is our responsibility, and we should have entire freedom of action as long as we meet the agreed criteria. I pay tribute to the protocol. They have got there some additional flexibility which is very important.

Mr. RYAN: My point is that in concentrating this flood storage space at the two most southerly reservoirs, High Arrow and Duncan, it makes for a very excellent feature of the treaty we are studying now on the whole.

Mr. McNAUGHTON: No, I would not agree with that.

Mr. RYAN: Would it not leave us with more firm power at Mica where our generators would be? Would it not have that effect?

Mr. McNAUGHTON: That is a simple question to which you cannot give a simple answer; provided that the flood control releases are not large in relation to the average annual release for power purposes, you can absorb the power control release to create storage space with very little disadvantage to the operation of your plant. But when they become excessive, then you begin to run into many difficulties.

Mr. RYAN: Only 80,000 acre-feet affect Mica, where we get our 1,800,000 kilowatts of power. Is that right?

Mr. McNAUGHTON: That is right, but that is merely a transfer of 80,000 acre-feet put in at Mica.

Mr. RYAN: I am trying to find out. I take it that the opinion is that we will get more power at Mica.

Mr. McNAUGHTON: No, that is not the case at all. I cannot prove it, but I have made a suggestion that you gentlemen might think over, namely, the allocation of that amount of power and that amount of flood control space to be used at Mica may well have the effect of establishing the fact that Mica is callable under article IV(2)(b) and IV(3) for use should occasion require for floods of a larger magnitude, and I mean callable by the United States. I should not say floods of larger magnitude because that was my original proposal, but that concept, in the course of treaty negotiations, has been entirely eliminated, so that Mica is callable anyway.

Mr. RYAN: Suppose we do get an emergency, a projected flood control, a boundless emergency, one that we have never experienced before under the project, why would we not evacuate all our storages and get power in return for it?

Mr. McNAUGHTON: Power is not the significant factor, I can assure you of that. You can think about it in relation to the changing role of storage to which I have made reference on several occasions. What happens later on, you will see; but I have given an explanation of that which I hope you will read and come back to again. All I want to tell you is this: the United States is anxious to get the absolute maximum amount of Canadian storage available for call for flood control that there is on call so that they have their option on it. That was their decision regardless of the consequences.

Mr. RYAN: They have not got it now.

Mr. McNAUGHTON: They have it in the protocol in a far more acute form than it is in the treaty, I assure you.

Mr. RYAN: I do not think so.

Mr. McNAUGHTON: I have given you evidence for it and I have spelled out every paragraph and every clause to show it. Let me say this: in the lower basin of the Columbia river in the vicinity of Portland, Oregon and Vancouver—not our Vancouver but the one on the opposite side—there is an extraordinary search for space for expansion which all these burgeoning cities wish to have. Now, what they are trying to do is to emulate King Canute who tried to stop the floods. And you know what happened to him. He was drowned.

Mr. BYRNE: He did not have as good a plan, though.

Mr. McNAUGHTON: That is the whole objective of the United States. This treaty is not being done for the operation of 8.45 million acre feet, which while it is a big storage, is in fact a limited commitment. Rather, the United States wants to get flexibility in the operation of the additional storage of all existing facilities in the Canadian basin, but with no specific objective whatever. They have been trying to eliminate any objective so that they can use the storage as they want. However limited the objective may appear, they will make it only a part of the commitment.

Mr. RYAN: On this point of limitation of objectives, I would like to ask you a further question in respect of your brief at pages 4 and 5. In answer to Mr. Brewin yesterday, you quoted a section of paragraph 5 of annex A of the treaty.

Mr. McNAUGHTON: What is that again?

Mr. RYAN: Page 4 of the general's brief, and paragraph 5, about one third of the way down.

Mr. McNAUGHTON: On page 4?

Mr. RYAN: That is right; you quoted a section of paragraph 5 of annex A of the treaty, which in your view gives the United States almost complete

freedom to call on 8,450,000 acre feet of flood control storage covered by that annex even though no real flood control need exists.

Mr. McNAUGHTON: That is right.

Mr. RYAN: And you say further:

There is no specified restriction that when expected flows are small these evacuations are to be reduced. It is most important they should be for when expected flood flows are small then, also, the total runoff is usually small and it is especially important that available supply be conserved for essential uses and not wasted in unnecessary precautions.

For this reason a deterrent to abuse by the United States entity should be incorporated in the treaty.

My question to you is this: my question to you may be a little lengthy. Is not that deterrent already there and contained in a sentence which you omitted from your quotation; is it not in paragraph 5 of Annex A:

The use of these diagrams will be based on data obtained in accordance with paragraph 2.

Paragraph 2 refers to an agreed hydrometeorological system. This can be found at page 111 of the green book. As a result of paragraph 2, this agreed hydrometeorological system, calls for flood control that must be on a basis of need for flood control as established by the hydrometeorological system. Is that not the most recent control position and does it not tie down any United States calls under the formula projected there?

Mr. McNAUGHTON: I would say certainly not. If you will look again at article IV (3), dealt with in paragraph 2 of the protocol, you will see that objectives of control have been generalized in the word "adequately". Who determines what "adequately" means. The Americans may want it for trivial reasons.

Mr. RYAN: You are getting into another area—

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Could you suggest, Mr. Chairman, that Mr. Ryan allow General McNaughton to answer and suggest that perhaps General McNaughton is better aware of what is the relevance of the question?

The CHAIRMAN: I am sure General McNaughton needs no protection from anyone here.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I do not want to protect General McNaughton; I want to protect myself. When Mr. Ryan keeps making his rather strange interjections, I get lost.

The CHAIRMAN: At the moment, Mr. Cameron, you are eighth on my list. If we have rambling answers or rambling questions, I do not think we will ever get through with these proceedings. I think that each member of this committee wants to get to specific questions, and would like specific answers to those questions. I know the general is endeavouring to assist, and I am sure Mr. Ryan means no discourtesy, nor does any member of this committee, to any distinguished witness who appears before us. However, I do feel that in some of our proceedings we have tended to wander a good deal.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): They do indeed. I would suggest you listen to my point. I was not trying to protect General McNaughton; I was trying to protect my right as a member of this committee in the face of a barrage of questions.

Mr. LEBOE: I am interrupting to say that since we have had General McNaughton on the stand, this committee has been taken through a good deal of rambling; there is no question about that. From time to time the witness

has said that he has to go through all the background before he answers the question. I, for one, have been sort of chafing under the collar, because we are not getting straight answers to specific questions to which I think we are entitled.

The CHAIRMAN: The problem of the Chair, as I see it, Mr. Cameron, is there are so many supplementary questions which do come from an extensive answer. Of course, some answers cannot be very succinct; we recognize that. I do note what you say, but I hope we can proceed with as direct questioning and as direct answers as possible. Only in this way do I think it is possible to do justice to all members of this committee in our questioning of this very important witness.

Mr. RYAN: Mr. Chairman, I would like to make it clear that I have nothing but the greatest respect for General McNaughton. In fact, it is due to the general's criticisms of the treaty in the first place that I took such an interest in it. I do agree with some of his points, but there are others with which I disagree. At present I am endeavouring to follow a line of questioning, and I find it extremely difficult to follow the subject. I would like to keep in a certain narrow area in respect of this matter of flood control. I do not wish to become involved in any legal argument over the meaning of words, and that is possibly why I have been a little obnoxious, but unintentionally so.

Mr. McNAUGHTON: I do not find your questions obnoxious at all. What I would like to be able to do is to give an answer which is correct. As I said in answer to some questions yesterday, to questions which were posed involving a statistical answer in respect of area of ground flooding, and so on, I am not prepared to give answers which have no meaning unless they are associated with an evaluation of the unit in which they are expressed. The whole field of flood control is an interrelated field. What I have been trying to express to you is that our United States friends have endeavoured, all through this treaty and all through the International Joint Commission discussions, to enlarge their control over the Canadian reservoirs in the great floods which begin when people hear about them through the hydrometeorological service. This begins to create an anxiety and begins to create a demand involving an unnecessary burden for the operation of every possible measure of flood control that can be used. There must be responsibility in respect of this flood control. Otherwise, what are they making of us? They are making of us a storer of water. Nothing else has a prime objective in the whole great waste of our country. We cannot have that.

Particularly where we are talking about the existing facilities and additional storage, I have sought to develop a principle and an article in the treaty under which we would provide any storage which we had, and which was needed. However, there must be deterrents, and the decision with respect to when the call is made must rest with the United States. We are not going to take responsibility for it; we should not. Inherent in those principles there should be a deterrent against abuse, so that somebody has to stand up to the people who have become hysterical and demand the whole of the storage of North America. You have to have a requirement that the United States people have to put the brakes on themselves. That is what I proposed when I made this first proposal of offering to stand over their shoulder for legitimate purposes and give the use of our storage as a priority matter to help them out. There must be a reference in all these things to the effect that they must not call on our storage if they do not think it necessary. They must have the charge; that is what is implicit in all this. That is what has been destroyed by the treaty provisions which are wrong, and by the protocol which is worse.

Mr. RYAN: General McNaughton, do you not agree that paragraph 2 of Annex A at page 75 of the green book does put a severe limit on their calls?

Mr. McNAUGHTON: Paragraph 2?

Mr. RYAN: Yes, this hydrometeorological system. This is in respect of the basic 8.54 million.

Mr. McNAUGHTON: No.

Mr. RYAN: It is based on scientific evidence, is it not?

Mr. McNAUGHTON: In the brief I have explained to you—and there is a good deal of statistical information given in the blue book which bears it out—we have never had any objection to providing storage in the operations for flood control under an objective which needs to be met in order to prevent serious damage in the United States. By definition of the United States that objective is to control a flood of the 1894 magnitude, which is the biggest flood in recorded history in the lower Columbia basin, to an amount of 800,000 cubic feet per second at the Dalles in the lower basin. Now, to provide that flood control, in addition to the storages which already exist, a total of about 6½ million acre feet of storage space is required. That is an objective we always have been willing to accept. That would give the United States the protection of existing facilities from a flood of the standard magnitude.

When that 6½ million acre feet is allocated, about 1.35 million acre feet could be put as an obligation on the operation of Libby dam in Montana, if the Libby dam is built; otherwise, we would have to absorb the whole 6½ million acre feet, to do what we think is right from the neighbourly point of view. But, when you come to extend that 6½ million acre feet up to 8.45 million acre feet or something more, then you are getting into a position where the drawdown of the storage base is interfering with power and other purposes, and is putting an unnecessary burden on Canada. That, we object to.

Moreover, if you look at the evaluations of that storage you can see that the United States do not think it very worth while because while they are willing to put an evaluation in respect of damage prevented on the 6.5 million acre feet at 1.38 per acre foot, when you go beyond the 6.5 acre feet they are only willing to pay 11.4 cents an acre foot for that storage, which is a trivial matter, about 1/10 of the other values. If it is not important to them why should we place a very serious burden on Canada in that respect?

I have maintained objections to this in repeated discussions in the International Joint Commission when they insisted on tabling there what their offer was. This offer was recorded in the International Joint Commission principles, and I reserved our position and told them that I would go to the government of Canada to place this matter before them and others, as well as before this committee when I spoke before it. Further, I told them I was going to take the most firm objection to our taking any responsibility for extending the objective beyond that of control of a flood of 1894 magnitude to 800,000 cubic feet per second at The Dalles. This 8.45 million acre feet should be reduced to 5.15 million acre feet if Libby is not built, and to 6.5 million acre feet if Libby should be built.

Mr. RYAN: I understand they are paying for this service, that that is what they wanted and that is what they were prepared to pay, and that is part of the bargain.

Mr. KINDT: Mr. Chairman, I have been in this committee for three successive meetings and I have not asked one question. I would like 15 or 20 minutes at this time to put my questions.

The CHAIRMAN: Mr. Kindt, I just had a note from you which says:

Is Mr. McNaughton going to be here for one, two or more meetings?

I should like to have at least 15 minutes with questions to Mr.

McNaughton but I don't seem to be able to get a question in or nothing. This has been true for the past three meetings.

Mr. Kindt, I have never had any indication from you either visually, by word or through communication in this respect.

Mr. KINDT: I have stated my position a good many times.

The CHAIRMAN: Mr. Kindt, your name is on the list. We have you on the list after Mr. Davis.

Mr. KINDT: You had better take another look at the way in which this committee is being run.

The CHAIRMAN: If there is any question of lack of confidence in the Chairman, Mr. Kindt, I would ask you to make a motion and I will entertain it at this time.

Mr. RYAN: If I might pour a little oil on these troubled waters I will surrender my questioning at this time to give someone else an opportunity, and I will revert to questions later on.

The CHAIRMAN: The next person on the list is Mr. Macdonald.

Mr. MACDONALD: Mr. Chairman, may I say I have been waiting for a couple of days as well so I will take this opportunity to put some questions.

General McNaughton, I was interested in your statement yesterday when you said you are not a lawyer and acknowledged your incompetence on legal questions. At this time, I would like to ask you in respect of the legal interpretation of the treaty and protocol if you have had legal counsel?

Mr. McNAUGHTON: Mr. Chairman, in answer to Mr. Macdonald, I would say that for the last 12 years I have sat with some of the most eminent legal counsel in the world and have heard their arguments for and against these various matters, and on certain aspects of the protocol I have had the benefit of legal counsel.

Mr. MACDONALD: Could you tell us from whom you obtained legal advice in respect of the protocol?

Mr. McNAUGHTON: No, I am not at liberty to do so as this advice was given confidentially.

Mr. MACDONALD: General McNaughton, I think you would agree that anything which would shed further light on this general subject would be very useful, and if there is legal counsel experienced in this field who has had specific knowledge of the protocol

Mr. McNAUGHTON: In trying to carry the note of warning, which I hope I have carried to the Canadian public in respect of the treaty and protocol, I have had to draw on a number of people who have spoken to me in confidence, but I am not at liberty to give their names without specific permission. I think you will understand my position.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, may I clear this up a bit. Mr. Macdonald is concerned in respect of General McNaughton having competent legal advice. Some of us are trying to arrange for Dean Frank Scott of McGill University to appear before this committee. As you know, Dean Scott is a prominent constitutional lawyer.

Mr. MACDONALD: This is not of a constitutional nature but concerns Canadian and public international law, which is quite a different field. Have you had specific advice by people experienced in public international law and, if so, who?

You will not answer.

Mr. McNAUGHTON: I am hopeful that some of these gentlemen will appear.

Mr. MACDONALD: So are we.

In the course of your testimony yesterday you told us you could not give us the detailed cost of implementing your plan, and I was not left with a very clear idea what sequence you proposed developing. Could you tell the committee what downstream benefits you would expect to get from your sequence, whatever it is?

Mr. McNAUGHTON: The figures I gave you yesterday were for a development within Canada without the downstream benefits; I have not given the part dealing with downstream benefits, which entails the working out of the unit costs. Now, I am interested and concerned—and I think Canada should be concerned also—in the development being carried to the limit of what is wanted in the future, not any partial development at this date. We must have a plan of best use of our water, and what I was endeavouring to use as a comparison was sequence VII of the International Joint Commission, which is a sequence which includes the High Arrow dam and Libby, with sequence IXa, in which those two projects are excluded. I brought you up to date yesterday with the latest estimates we have been able to obtain as the result of any releases from any responsible department of government here or in British Columbia. These figures indicate, for instance, that the High Arrow figures have gone up steadily, starting at \$66 million, to \$71 million, then again to \$80 million and now again to \$124 million with certain services still completely unassigned. I have used the final figure given of \$124 million for the project and, similarly, for all the other projects in these two sequences.

I gave you the capital cost of sequence IXa to completion and sequence VII to completion and will be glad to repeat those figures if you wish.

Mr. MACDONALD: General McNaughton, you have been critical of the downstream benefits provided under the treaty. What downstream benefits would you expect to get in your sequence?

Mr. McNAUGHTON: I should like to state that in the figures I gave there were no downstream benefits included. I was dealing with the at site conditions in Canada.

Mr. Macdonald, I would expect to get the half share of the downstream benefits determined in accordance with the I.J.C. principles and not the cut down share of the downstream benefits which was arrived at in the negotiations on which the treaty is based. If you will look at the analysis and project report dated October 19, 1960, which is a report of the United States negotiators with fairly wide circulation, you will note in it that they have recorded the benefits to the United States in prime power under the conditions of 1970 for High Arrow amounting to 645 megawatts; for Duncan, 138 megawatts; for Mica, 359 megawatts and for Libby, 544 megawatts. As far as Canada is concerned the High Arrow project is credited at 484 megawatts; Duncan with 75 megawatts and Mica with 204 megawatts. You will note that the total benefits accorded to the United States in respect of this joint undertaking, where it was understood in the I.J.C. principles that benefits would be equally shared, are put down as 1,686,000 as against our 786,000.

The figures I gave were not intended to deal with the application of downstream benefits, Mr. Macdonald. However, if it is your pleasure, we could do some of that calculation.

I will divide the benefits in accordance with the International Joint Commission principles equally, getting away from the fact that the treaty, for camouflage or some other very misleading reason, shows that we get a half share of the downstream benefits, but the next article proceeds to define them and takes away our right to the half share. I would say to you that it should be done on the 50-50 basis which was originally agreed upon.

Mr. MACDONALD: I think it was agreed to by both you and the negotiators of the treaty on a 50-50 basis. What I am saying specifically is, we have a

proposal for a specific dealing in respect of downstream benefits and I am asking whether you have ever calculated what you yourself would expect in dollars and cents, not in general reference to the International Joint Commission principles, from the sequence development you are putting forward? In other words, it is now three years since the negotiation of the treaty and only a few months since the negotiation of the protocol. What specific terms would you expect to get from your sequence so that we can compare it against what we think we are going to get?

Mr. McNAUGHTON: Mr. Macdonald, I am delighted to hear you ask that question.

Sequence IXa as I have set it out has a provision for the installation and operation of the storage for flood control of the 6,500,000 acre feet, which we think is a very legitimate service that we should render to the United States for flood control. Provision is also included for the operation of the 15,500,000 acre feet which the treaty provides should be available for the United States in the initial period and until we begin to operate the Mica storage when that amount of storage, at that point commences to interfere with our at site power production in a very serious way. As a matter of fact in the course of negotiations, when I was still very much on the outside, I had an opportunity of talking to some of our negotiators and I explained to them how serious, under those conditions, the liability of 15,500,000 acre feet had become. The result of these representations, which represented the feeling held by my colleagues in the International Joint Commission as well, whom I had talked to informally, was that they were accepted. That is the original origin of the cut-back in the operation of the 15,500,000 acre feet which is provided for in the Annex paragraph 7.

What I am prepared to do, to answer your questions specifically, is point out that included in my proposal is the operation for power of 12,500,000 acre feet, which would be the condition we foresaw under the treaty, with the same conditions as in the treaty and in sequence IXa giving the United States all the benefits of the 6,500,000 acre feet, which is 95 per cent of the flood control benefits, as well as the full amount of the 12,500,000 acre feet of Canadian storage. Those are incorporated in the protocol figures which I gave to you yesterday in answer to questions in respect of the situation in 1985.

Mr. MACDONALD: Reducing that to simple terms, how much will it pay off in dollars and megawatts?

Mr. McNAUGHTON: I did not get your question?

Mr. MACDONALD: You have stated how the downstream benefits will pay off here under the treaty plan. Specifically how will it pay off in dollars and megawatts under your proposal?

Mr. McNAUGHTON: I am in a little difficulty in regard to that question because my calculations are all made on the only flow tables I have available, namely the figures of the 20 years of record. They have been changed to the 40 years of record now and while I have the raw data I have to do all my arithmetic myself.

Mr. MACDONALD: Even subject to that limitation?

Mr. McNAUGHTON: My observation now will be based on the figures of 40 years' record.

Mr. MACDONALD: You have not specific figures?

Mr. McNAUGHTON: Under those bases and not challenging the criterion of the treaty but merely challenging the inequality of giving us 40 per cent and the United States 60 per cent of the benefits that are put out when the agreement was for an equal division, then roughly the benefits attributable to Canada would require to be increased by about 20 per cent. These benefits

of course apply to the period up to 1985 when the objective is purely for firm power on our side and in the United States. By that time the objective which will predominate will be entirely different. While this does not affect the downstream benefits, if the actual releases from the storage are regulated to suit the United States, we are going to lose very seriously indeed, and that has to be taken into account.

It might be of interest, to give you a sense of proportion—I am not suggesting this as a comparison—that the United States benefits which we would confer on them if we allowed Libby to be built, are 544,000 megawatts. You will note that this figure of benefits which the United States gets from Libby alone—our gift—is just about equivalent to the total share of the downstream benefits we get from the United States. In other words, by allowing the United States to build Libby you have given them the power which in another form they are handing back to us as our share of the proceeds of the joint deed. That is an interesting matter.

Mr. MACDONALD: But in the interest of the aptness of specific answers perhaps I can move on to another question. You said yesterday that you have been opposed to the treaty ever since its signature. My question is: Why did you not oppose it when the final treaty was in draft form and before it was signed?

Mr. McNAUGHTON: I certainly did.

Mr. MACDONALD: I would like to refer you to a letter which appeared over the name of the Hon. E. Davie Fulton in Mr. Ripley's publication on September 17, 1962 in the *Engineering and Contract Record*. I would like to quote from this article at page 48 the following paragraph. Mr. Fulton says:

Having worked out the details of the treaty, the negotiators then had to decide whether the specific plan agreed on was one they should recommend to the Canadian government for its approval and signature. At a final meeting with our technical advisers attended by General McNaughton—who had been one of our close advisers throughout—I personally asked each and every person his view. Not one of those present opposed the recommendation that the treaty should be accepted and signed.

Is that statement true or false?

Mr. McNAUGHTON: It is not true because there is more to it than is indicated in those documents. The occasion to which I think Mr. Fulton is making reference I would think was a meeting of the Canada-British Columbia policy liaison committee. On that occasion I refused to join in making a recommendation on the subject to the government of Canada. Later, at a meeting with our ministers, I spelled out my reasons in considerable detail. I would suggest that the record of that meeting when I went into some considerable detail with our ministers is the place where you want to look for my opinion. I made it abundantly clear that I regarded this treaty as it has been put forward as a document which very seriously compromises the rights and position of Canada, and I made it very clear that I wanted the opportunity to appear before this committee to which in the last analysis all government policy has to come before recommendation to parliament. I wanted to come before this committee in order to present these views and the information on which my opinion is based. I am very, very glad to be here today and I am willing to stand cross-examination on every particular thing I have put before you. I hope that by persuasion and the correctness of the facts that I present I may enlighten your opinion and that you will support these views, as indeed this committee has supported my views in the past.

Mr. MACDONALD: I have just two final questions, general. Firstly, do you not think it would have been advisable at such a focal meeting with all other advisers present to make it perfectly clear that you did not accept the treaty, and if you did not accept it would not the proper course have been to resign?

Mr. McNAUGHTON: I do not think so. First of all, all I was called upon to do at that time was to say that I would not join in the recommendation to the government. I think that makes my position very clear. Afterwards, when I had an opportunity to talk to ministers, that was the proper place to give my reasons.

Mr. DAVIS: You would say, General McNaughton, that the statement appearing in the Hon. Mr. Fulton's letter is a deliberate untruth?

Mr. McNAUGHTON: I would say it is an incomplete statement of the facts.

Mr. HERRIDGE: Mr. Chairman, before proceeding to ask the general some questions I would like to suggest that in fairness to all members of this committee every member should have an opportunity to question any witness prior to any member having a second opportunity to question a witness, except with respect to supplementary questions. I quite sympathize with Mr. Kindt's complaint. I know he has been sitting here waiting for an opportunity to ask questions.

The CHAIRMAN: I am entirely agreeable with that suggestion.

Mr. HERRIDGE: I think this would be the fairest way we could do this.

The CHAIRMAN: As a matter of fact, I notice that following Mr. Stewart is Mr. Pugh, who is not here today. If the committee will not mind this substitution, we could put Mr. Kindt in Mr. Pugh's place. Would that be agreeable?

Mr. STEWART: I am quite happy to yield my place to Mr. Kindt.

The CHAIRMAN: You will follow Mr. Herridge, and then be followed by Mr. Stewart. I would ask all members of this committee, if any of them labour under any sense of injustice, to express it to me. It happens that Mr. Kindt usually smokes a cigar and he does bow his head quite frequently. I have never treated this as any tribute to me or any message to me at all. I must say quite sincerely that I was not aware of Mr. Kindt ever having been overlooked. If any member of this committee feels he is being overlooked, I would like to know of it at the conclusion of the meeting or even through a message.

Mr. Herridge: You agree with my suggestion, Mr. Chairman?

The CHAIRMAN: It is a very useful suggestion.

Mr. HERRIDGE: Yesterday I had no opportunity to ask any questions but did take notes. On the basis of those notes I would like to ask some questions of General McNaughton in order to clear up a few things which were not sufficiently detailed, in my opinion.

My first question is a very important one which is related to the effect on our future rights by vested interests.

If we allow the United States to use the entire flow of the Columbia for 40 years and build up vested interests based upon its continued delivery by Canada, what are our real chances of being able to repatriate it for our own use?

Mr. BYRNE: You should bring in that international lawyer!

Mr. HERRIDGE: This is a subject that is not understood by many people and I think we should have some detailed information about what these vested interests do to our rights in the future.

Mr. McNAUGHTON: There have been some complaints from some people that my explanations—which I have given in order to show the whole

environment—have been a little long. In answer to this question of Mr. Herridge I propose to give my answer in one word, and that is none. Then I will carry on with whatever explanation is required. However, the answer is none.

Mr. HERRIDGE: It is this question of vested interests built up in the United States which affects our future.

Mr. McNAUGHTON: The vested interests have two parts in matters of this sort. They are the vested interests built up in the United States consequent upon commencing a plan which is not the best use plan for Canada, and which in future years we will want to change.

The first thing is that we should look in that respect to the very difficult and unfortunate experience of our friends to the south.

In the development of the Columbia river from the 1940's onwards the interest of the public and of congress was focused on the great power plants. Consequently, it was very easy to raise money to develop the power plants. It turned out that it was very difficult to raise money to look after the most essential matter of storage which had not the spectacular appeal to the public that installations such as Grand Coulee and Bonneville and some of the others had. It was not until just before the submission of the reference of 1944 to the International Joint Commission that it came to be realized in the United States that it was essential to the full development of the basin that upstream storage should be provided for these great plants in order that the flows of the river could be ironed out.

The United States army engineers, who have charge of these matters then turned to see what they could do about it. They found that in the interim with the impetus of the availability of rather small amounts of power in those days from the big plants, industry had spread into the regions, people had moved in, farms had been developed and so on, and they found that for all practical purposes many of the desirable areas, from the storage point of view and from the point of view of flood control, contained properties the price of which had become prohibitive. They are asking us to put ourselves in exactly that position. They are asking us in Canada to repeat that mistake.

We have shown—and Mr. Fulton and others have agreed, and very important people in government have agreed, as also some of the people sitting round this table—that sequence IXa gives the best use of waters in Canada, and we have gone to no end of pains to provide in the treaty a theoretical facade, if I may put it that way, that in the years to come we might recover the vital storage areas in the East Kootenay which are high altitude and very beneficial to power production now, and will be much more beneficial in the future. We are omitting to carry out that essential element of our plan at this time when it can be done. We are deferring it to the future when it cannot be done. That means that we are putting ourselves into a very serious position. By our own action in signing this treaty we are denying ourselves the possibility of future development along the lines which are in the best interests of Canada.

Although I defer to Mr. Martin in what he has had to say about the result and the fact that he thinks we could develop to the South Saskatchewan from the high altitudes, under the law we might have a right to make those diversions, which are certainly going to be required in the future in the South Saskatchewan, but I say again it is not a matter of right, it is a matter of possibility. By postponing the development of the storages for 80 years or so from the signature of the treaty, although we can have all the rights in the world—we have the right to wait for kingdom come if we want to—we lose the possibility of an economic project because of the great development which will take place.

That is a vested interest which we have to look after, Mr. Herridge, and which in this case will destroy the possibility of making the best use of our own waters for our own purposes, which we have every right to do.

When you come to the United States, you have very similar conditions, but not quite in the same sense. I will take Libby as an example of a vested interest which will have been created by this treaty, and which is the most destructive thing that is done under the treaty as far as the interests of Canada are concerned. Looked at from the point of view of national interests, I would say that Libby is suicide because it is an action which we have taken that we ought to have had the wit and gumption not to take. What it really means is that under all the conditions set up by the treaty, you have allowed the United States to build the dam at Libby, Montana, and we do not have to allow it because we are specifically protected by article IV of the treaty of 1909 which forbids flooding above the boundary without consent. What does it do? The elevation from Libby to the boundary without flooding across the boundary, the elevation at the dam which is used for power purposes is 190 feet; the flooding at the boundary which is proposed at Libby is 150 feet. That means that at Libby, by gift of Canada for which we get nothing, the head has been raised from 190 feet to 340 feet. The Canadian head, which we can use and which we have handed over, which adds to the power at site at Libby in the ratio of 340 to 190 means something like 40 per cent additional output. It is on that additional head from Canada that certain circles in the United States have purported to justify the economics of this very very expensive project at Libby.

Economically it could not be built even apart from our right to prevent it unless we make it economic to the United States by a straight gift. That is one aspect of it. Do you think we are ever going to get it back? If you read the clauses of article XII carefully you will find that their skilled draftsmen in the United States have made it impossible for us to do anything to retrieve our position in the future. What is the use of our trying to retrieve our position if in technicalities, and if in effect we cannot make use of those rights. And so again we have this situation in the east Kootenay. If we do not "do" these storages which are essential for our use and control of these waters now, then with the lapse of time we will never be able to do them, and the United States is well aware of that, because it has had this very, very bitter experience in finding some of its best sites on its rivers, which are needed for storage purposes, not available to it.

Then we come to Libby; the United States purpose, if they have an opportunity, is to develop it almost from the start. It has been indicated that Libby is going to be machined, not for the generation of firm power,—that is the present objective—but rather it is going to be machined for the purpose of providing capacity to stabilize systems down below. There are going to be at least 800,000 kilowatts installed at Libby initially, and provision has been made in the design for very much more; and even those are going to be operated to suit that definite and very much more flexible use of peaking in the true sense of the term.

Do you think we can fall away from that in the years to come? If they have got that and are using it in the system, you will find there will be one reason after another up, to an assertion of comity, which would prevent us from doing it, even if we could do it in our own country. The pressure would be such that I do not think it to be a practical thing. There is a vested interest, and you are building it up as a millstone around our necks. These are only a few examples.

Mr. HERRIDGE: I have been turning the aspects of this over in my mind. Can you explain to the committee about the physical location of the treaty

dams. You have dealt with Libby now. What effect will it have on our bargaining position in 30 years when we may wish to renew our sales agreement with the United States for downstream benefits?

Mr. McNAUGHTON: At the time we come to renew our sales agreement with the United States our bargaining position will be very weak unless we have an alternative use for the storages in question. This brings me most particularly to the High Arrow storage. High Arrow storage has 7 or 8 million acre feet in it, and at least $3\frac{1}{2}$ million acre feet is called channel storage. It was there before we entered on this bargaining, and it is available to the United States without charge. So there are about 4 or 5 million acre feet left. The whole treaty has been set up in criteria of operation in such a way under paragraph 7 of annex A as to emphasize, as an objective, firm power from hydroelectric sources.

I have said in my brief—and perhaps I should say it more emphatically—that with the changing role of hydroelectric and storage in these great systems which are in the course of developing and evolving, firm power ceases to be an objective for the hydroelectric plants, and they pass to a peaking role, using the term in the broad sense. We have Libby down close to the boundary, and since we have no alternative use for it, although there is continuing use in the United States, I think it is a matter of reason that we are in a very weak position with it because the bargaining results from that storage.

Mr. HERRIDGE: Yesterday I think it was Mr. Byrne who suggested that Canada had more guarantees of assured flows from Libby than it had at Waneta. Is there any evidence in the treaty which would support this claim?

Mr. McNAUGHTON: Mr. Chairman, if you look at article XII of the treaty which covers the development of Libby, you will find this very important paragraph. First of all, paragraph 2 which states that:

(2) All benefits which occur in either country from the construction and operation of the storage accrue to the country in which the benefits occur.

And then, paragraph 5 which reads as follows:

(5) If a variation in the operation of the storage is considered by Canada to be of advantage to it the United States of America shall, upon request, consult with Canada. If the United States of America determines that the variation would not be to its disadvantage it shall vary the operation accordingly.

Now, if Libby were operated to suit the Canadian load, and added after Duncan, according to the Gibb report, it would be worth 20 megawatts. The Duncan storage, which is our own storage, would be worth 90 megawatts of additional power; because it is the first added storage. So you see the benefit to firm power in existing plants of Libby, because of the super saturation in our requirements, has fallen quite low in value in terms of firm power. That would not be so bad for us, because what we are concerned with more particularly on the west Kootenay is the development of additional plants so as to make the best use of the flows that exist.

There is a plan to add some more units at Brilliant, and that again would be quite satisfactory to make use of Libby and useful also to us, if these flows were to be regulated in a way which would serve our Canadian load which is essentially for prime power.

Mr. MACDONALD: Is it not a fact that the United States agrees in paragraph 5 of the protocol to operate Libby so as to co-ordinate Libby with the operation of the east Kootenay plants and to benefit the Canadian load?

Mr. McNAUGHTON: I am glad you asked that question. I used a slang expression in my presentation of "pie in the sky". That is what I think the

first part of that article is, because when you come to the operating clauses at the end of it, you will find that the rights of the United States have not been derogated from in any particular whatsoever.

Mr. MACDONALD: You are offering a legal interpretation now.

Mr. McNAUGHTON: No, I am offering you an interpretation based in terms of common sense. If the United States of America determines that the variation would not be to its disadvantage, it shall vary the operation accordingly. Is there anything more clear?

Mr. MACDONALD: I was referring to paragraph 5 of the protocol.

Mr. McNAUGHTON: Oh, I was looking at paragraph 5 of the treaty. But paragraph 5 of the protocol is this: Let me read it again.

The protocol, so far as the general principle of operation is concerned, says, "Elsewhere in Canada in accordance with the provisions of article XII (6) of the treaty", and it refers to International Joint Commission levels.

Mr. MACDONALD: So, the obligation to co-ordinate Libby with the west Kootenay plants, plus the obligation to maintain the level of Kootenay lake, will ensure generation in Canada.

Mr. McNAUGHTON: No.

Mr. BYRNE: Mr. Chairman, I would like to ask a supplementary question.

The CHAIRMAN: We do not want to get too far afield.

Mr. BYRNE: Mr. Herridge made an assertion which was incorrect.

Mr. HERRIDGE: I said I heard correctly.

Mr. BYRNE: I am sure you did not.

I believe Mr. Herridge said I was under the impression we would have greater control over the flows from the Libby than we now have from the Pend Oreille. This is not so. I made no assertion that we had any controls whatever over the flows from the Pend Oreille system, but that we do, because of a co-operative agreement have some measure of control over the flows from Libby.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): On a point of order—

Mr. BYRNE: In a brief which has been supplied to the committee by the West Kootenay Power and Light Company, they assert—

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This is not even a supplementary question.

Mr. BYRNE: —they will be able to make full use of those storages and firm up 210,000 kilowatts. They will be the ones who construct the plants and they certainly would not construct them unless they were of the opinion they could use that water by its control and re-control on the Kootenay. It would be silly to think any company would go ahead and make these installations unless they were convinced they could make use of them.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This is not good enough.

The CHAIRMAN: Mr. Cameron, I am trying.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You did not try very hard, then.

Mr. McNAUGHTON: I am a little confused with regard to whom I should address my answers.

The CHAIRMAN: General McNaughton, would you be kind enough to address yourself to the last question put to you by Mr. Herridge, and I would ask members of the committee to be good enough not to interject. As soon as Mr. Herridge is finished, I want to give Mr. Kindt an opportunity.

Mr. McNAUGHTON: I have answered it.

Mr. LEBOE: Mr. Chairman, I think it must be remembered that Mr. Herridge did bring Mr. Byrne's name into the picture, and therefore I think his interjection at this point to clear up the matter was in order.

The CHAIRMAN: Perhaps his interjection was not by way of a supplementary question, but rather on a point of privilege.

Mr. BYRNE: Yes.

The CHAIRMAN: Mr. Herridge, are you finished?

Mr. HERRIDGE: I have two or three questions—

Mr. KINDT: Mr. Chairman, both the Liberals and the Conservatives have caucus meetings at 11 o'clock over in the other building, and I would suggest that after Mr. Herridge has finished we adjourn until our next meeting and go on from there.

Mr. HERRIDGE: Mr. Chairman, I have three other questions to ask of the general at this time. Article IV, clause (5) indicates Canada cannot build structures after the treaty is signed that will affect the flows at the border. My question is, will this affect any proposed diversion structures?

Mr. McNAUGHTON: I think, Mr. Chairman, with your permission, that in answer to that question I should read the treaty provision because it is very important. This is article IV, clause (5):

Any water resource development, in addition to the Canadian storage, constructed in Canada after the ratification date shall not be operated in a way that adversely affects the stream flow control in the Columbia river within Canada so as to reduce the flood control and hydroelectric power benefits which the operation of the Canadian storage in accordance with the operating plans in force from time to time would otherwise produce.

That means that so far as the west Kootenay is concerned, the only storage which can be operated to affect the flows on the west Kootenay is the storage at Duncan which has the capacity of 1.4 million acre feet of usable storage and the existing storage under the current International Joint Commission order which gives you about three quarters million acre feet. Now, those are the existing storages.

You will recall that under paragraphs 6 and 7 of Annex A, Duncan storage is substantially under the control of the United States. So, it will be operated for maximum system benefits. That storage is not available to help out the regulation of the Kootenay lake. The second storage which comes into the picture is what exists at the present time, namely about .7 million acre feet of Kootenay lake itself. In the first instance that storage is under the direction of the West Kootenay Power and Light Company, because it is that company which incurred the expenditures which made the raising of the level possible. They spent a good deal of money in exploring what is known as the Grohman narrows. This cost Caminco a lot of money. They paid that money in return for an order of the International Joint Commission which had jurisdiction in the matter to regulate the flows.

Now, what has happened to the best of my knowledge is that Caminco have been caught in between pinchers at Waneta by being put in the position, very unexpectedly from their point of view, where the refill of Hungry Horse would take pretty well all of the regulated flow on the Pend d'Oreille. They very unexpectedly found themselves in the position in the late summer at the time of the refill of Hungry Horse, where the flow would be reduced there to a point where only one unit out of the whole of plant four would be operating. Ever since they have been seeking to get a co-ordination agreement with the United States on this matter, and in the result of that co-ordination agreement, the only counter they have to play is this existing storage of Kootenay lake.

I ask you the question, if this storage of Kootenay lake is committed to the power company, how much is left to satisfy the condition that we regulate Libby?

Mr. TURNER: Mr. Chairman—

Mr. McNAUGHTON: I should go on to say there are no facilities to alter the regulation of flows from Libby, and those flows are going to be much the same in the forecast system as is adopted on the Pend d'Oreille.

Mr. TURNER: Mr. Chairman, on a point of order, if General McNaughton has finished his answer to the question put could we at this time take advantage of Dr. Kindt's suggestion to adjourn. It is obvious we are not going to conclude our questioning this morning; I would suggest we adjourn until 3.30 this afternoon.

The CHAIRMAN: Is that agreeable?

Some hon. MEMBERS: Agreed.

Mr. DAVIS: Mr. Chairman, before Mr. Herridge concludes, on a point of privilege, Mr. Herridge submitted some papers this morning which he attributed to Mrs. Davis.

Mr. HERRIDGE: I am sorry; I said Mrs. Davidson. I am not suggesting she is any relative of yours.

Mr. Chairman, I have some further questions when we meet again. I have not completed my questions at this time.

The CHAIRMAN: Gentlemen, I am advised by the general it is impossible for him to be with us this afternoon and I would suggest we have another witness. There is a suggestion that Mr. Sexton of the Montreal Engineering Company could be with us.

Would it be agreeable to the members of the committee if this witness appeared this afternoon at 3.30 p.m.?

Mr. MACDONALD: Mr. Simpson of H. G. Acres and Company Limited is fighting his way out of Hamilton Falls, Labrador, in order to be with us tomorrow. In my opinion, it would be useful if we could finish with this witness today in order that we could get on to one of the others. This witness of whom I have spoken is making a special trip to be with us.

Mr. KINDT: Mr. Chairman, I think it would be in the interest of General McNaughton and this committee to adjourn until tomorrow morning at 9 o'clock.

Mr. GELBER: No, no.

Mr. DAVIS: I would suggest we reconvene this afternoon.

Mr. HERRIDGE: It is my understanding the general is willing to come back at anytime the committee wishes to hear him in order that we can continue putting our questions to him.

Mr. McNAUGHTON: Yes, that is true. I apologize for the position I am in today. However, I am under a long standing engagement with a very senior authority and I just cannot appear this afternoon.

The CHAIRMAN: We understand your position, General McNaughton.

Mr. TURNER: Mr. Chairman, I do suggest we hear the witness which you have in mind this afternoon, and then ask the general if he is able to appear at 10 o'clock in the morning.

Mr. McNAUGHTON: Yes, I can be here.

The CHAIRMAN: Is that agreeable?

Some hon. MEMBERS: Agreed.

The CHAIRMAN: Then, it will be 10 o'clock tomorrow morning.

Mr. TURNER: Mr. Chairman, what time are we reconvening this afternoon?

The CHAIRMAN: At 3.30. The meeting will be held in room 112-N.

WEDNESDAY, April 22, 1964.

AFTERNOON SESSION

The CHAIRMAN: Mrs. Casselman and gentlemen, I see a quorum.

We have as a witness today Mr. J. K. Sexton, director of civil engineering, Montreal Engineering Company, who will be referring to a report entitled "Comments on the Columbia River Treaty and Protocol" dated March, 1964. This report has been prepared by the company for the government of Canada.

Appearing with Mr. Sexton is Mr. M. Wilschut.

To give you some of Mr. Sexton's background, he is a professional engineer and director of civil engineering for the Montreal Engineering Company Limited, and is responsible for the technical direction of all civil engineering activities in the company—also study director of the power study of South Central Brazil for Canambra Engineering Consultants Limited. He has had 36 years of experience in the investigation, design, construction supervision and operation of hydro and thermal electric power developments. His experience has included field work in all sections of Canada and in the United States, China, India, the Caribbean area, and various countries of Central and South America.

1960–Date: Director, civil engineering, Montreal Engineering Company Limited.

1947–1960: Chief civil engineer, Montreal Engineering Company Limited.

1934–1947: Supervising engineer, civil, Montreal Engineering Company Limited.

1933–1934: Operating staff of hydroelectric power plants—Calgary Power Limited.

1931–1933: Instructor and lecturer in engineering subjects—University of Alberta.

1928–1931: Construction, maintenance and operation of hydro plants—Calgary Power Limited.

Professional Memberships: Registered professional engineer, Quebec and Alberta. Licensed to practise as a professional engineer in British Columbia, Nova Scotia, and Newfoundland. Member, Canadian Electrical Association. Member, Engineering Institute of Canada. Fellow, American Society of Civil Engineers. Member, Society of Bolivian Engineers. Member, International Association for Hydraulic Research.

Professional Offices: Vice-president, International Commission on Large Dams. Chairman, Canadian National Committee of International Commission on Large Dams. Past Chairman, Hydraulic Power Section of C. E. A. Past Chairman, Technical program committee (Canada) for International Association for Hydraulic Research.

Academic Positions: Demonstrator and lecturer, Faculty of Applied Science, University of Alberta, 1931–1933.

Business Affiliations: Director, Montreal Engineering Company Limited. Director, Canambra Engineering Consultants Limited.

Papers Published: "Calgary's Ghost Water Power Project", *Electric Light & Power*, January, 1931, pages 27–31. "Hydroelectric Construction in Bolivia", *Engineering Journal*, 1940, pages 257–263. "Problems of Natural Phenomena in Hydroelectric Engineering", *The Saskatchewan Engineer*, 1946, pages 25–27. "Newfoundland", *The Saskatchewan Engineer*, 1950, pages 37–41. "The Influence of Tropical and Sub-Tropical Factors in the Design of Hydroelectric Plants", *Transactions of the Rio de Janeiro Sectional Meeting of the World Power Conference*, 1954. Volume 11, pages 69–84.

With him is Mr. Wilschut who received his bachelor of science at Delft University in 1953 and his master of science degree from Delft in 1955.

Affiliations:

1953-55: Research assistant, Netherlands National Research Council (T. N. O.)

1955-58: Design engineer, Aluminum Company of Canada Ltd.

1958-date: Senior design engineer (since Jan. 1963). Montreal Engineering Company Limited.

Experience: Hydrologic studies, power system studies, structural design, computer applications.

Professional Memberships: Corporation of Professional Engineers, Quebec.

Mrs. Casselman and gentlemen, this afternoon following the evidence of Mr. Sexton we will follow the formula which was suggested by Mr. Herridge so that each person will be given an opportunity, if they wish, to ask questions and then we will allow other members a second opportunity if they so desire.

Mr. J. K. SEXTON (*Director, Civil Engineering, Montreal Engineering Company Limited*): Mrs. Casselman and gentlemen, probably I should first explain that my company, the Montreal Engineering Company, was asked by the government of Canada to review the treaty in respect of the Columbia river, the protocol and sales agreement attached to the protocol, paying particular attention to several points which showed signs of public debate. One of these points was a consideration of the sales agreements in the treaty as a business proposition. Another was to compare the treaty program with an alternative program based on the Dorr-Bull river-Luxor proposition, again as a business proposition.

We were also asked to consider the benefits to Canada from the Libby project on the Kootenay.

We were asked to examine the adequacy of the controls in the treaty for Canada's part of the storages.

We were also asked to review the proposal to divert the Columbia river waters to the prairies.

We assigned a group to study these matters carefully. I was in charge of the group. Mr. Wilschut acted as secretary to the group, hence I have asked him to be here with me today. He is much more capable than myself of producing detailed information relevant to our studies.

Probably before I refer to our comments I should give the Chairman a brochure on our company in case there is any need to refer to it again.

I should say that we are a company of consulting and operating engineers which has been in business for more than 50 years, with headquarters in Montreal. We are consultants to a number of leading power companies and authorities in Canada as well as abroad. We count among our clients the government of Canada; both the Department of Northern Affairs and National Resources and the Northern Canada Power Commission; the B.C. Hydro and Power Authority; the Calgary Power Limited; Hydro-Quebec; Price Brothers; the Iron Ore Company of Canada; the United States Steel Company; the Nova Scotia Light and Power Company; the Newfoundland Light and Power Company; the Nova Scotia Power Commission as well as a number of government and private companies abroad, particularly in South America and India.

I believe you have our comments before you. I do not propose to read all of the introductory material but on page one appear the objectives, and I should like to repeat them as they are set out.

The primary objectives of this submission are:

- (a) to examine the probable financial results for Canada of the proposed Columbia river treaty as a joint undertaking in power development with the United States, and
- (b) to compare these financial results with those which might have been obtained by an alternative program of development.

In addition, it is proposed to examine the controls specified in the treaty to see if they provide sufficient flexibility for Canada to operate its future developments on the Canadian Columbia to suit the requirements of its own market without impairment of the financial results of the treaty.

The second item in the submission is general and deals with the Columbia river. I propose to omit reading that.

On page 4 there is first of all a brief tabulation of the storages of the Columbia river treaty. I do not propose to repeat those but I should like to call your attention to two pertinent geographical facts in respect of the Columbia river which are mentioned at the bottom of page 4. The paragraph refers to appendix 1. These appendices are arranged so they can be folded out.

We also have the screen put up for projection of plans and maps.

The CHAIRMAN: Is it agreed, gentlemen, that the maps and data referred to by Mr. Sexton, be included in today's proceedings? It is agreed.

Mr. SEXTON: About the middle of page 4, on the left hand side of appendix I, there is an outline map of the Canadian Columbia river basin, showing the locations of the three treaty storages, Mica, Duncan lake and Arrow lakes. This map also serves to illustrate two features of particular importance to Canada. We have noted on it some significant elevations.

(a) The Columbia river rises in Canada at an elevation of 2,655 feet in Columbia lake, in the Rocky mountain trench, and crosses the international boundary downstream of Trail at an elevation of approximately 1,300 feet. The significance of those elevations of course is that approximately half the head of the main stem of the Columbia is in Canada. Moreover, if you refer to the elevation of the Mica creek reservoir, 44 per cent of the total fall of the river is located between the proposed full supply level of the Mica creek reservoir and the international boundary. This division of head of the main stem of the river between Canada and the United States is of particular significance to the Columbia river. This fact has led to the proposal to develop power at the following sites:

- Mica creek dam
- Downie creek
- Revelstoke canyon
- Murphy creek.

Now, of course, there is Mica creek where there will be a power installation to follow the creation of the storage. Downstream of Mica is the Revelstoke canyon, immediately upstream of the city of Revelstoke, and then there is Murphy creek which is between Castlegar and the international boundary.

The second significant geographical feature of the Columbia-Kootenay system is the fact that the Kootenay river rises in Canada and makes a loop to the south through the United States before returning to Canada to flow through Kootenay lake and thence through the five hydroelectric plants on the west Kootenay river before joining the Columbia river at Castlegar. By accident of topography, it would be a simple matter to divert the Kootenay river at Canal Flats into the headwaters of the Columbia river. Those of you who may have visited Canal Flats will remember the remnants of an old navigational canal there where once upon a time I believe the old river boats made their way

from the Kootenay to the Columbia. That is an indication of the relative ease with which the Kootenay may be diverted to the Columbia at that point.

Now, if I may proceed to section 4 dealing with the Kootenay river, the treaty makes provision for diversion of the Kootenay river into the Columbia at Canal Flats 20 years after ratification. It would also permit the United States to begin construction of the Libby storage project on the United States loop of the Kootenay within five years of ratification; thereby creating 5,010,000 acre feet of usable storage, primarily for flood control, and backing up the water to elevation 2459, which is approximately 150 feet above the normal level of the Kootenay at the international boundary. In so doing, approximately 13,700 acres of Canadian land would be flooded.

In accordance with the treaty, Canada would be responsible for the cost of providing this land estimated at 12 million, and in return would receive the benefits of flood control in the Kootenay valley upstream of Kootenay lake, and of further regulation of the streamflow of the west Kootenay river for increased hydroelectric generation. This increase in regulated flow would make it feasible to add the Canal plant in parallel with the four upper plants existing on the west Kootenay and to increase the installed capacity at Brilliant, the last plant of the series, which would discharge into the headwater of the Murphy creek plant. Here are the five plants of the west Kootenay system, the four upper ones and the lower one at Brilliant. The Canal project is a scheme to carry the water by the four upper plants and use the entire head of those four plants to generate power in the new plant. Brilliant is the last plant. It would be above the Canal plant and it would be adapted to increased storage by the addition of units.

These developments would follow logically if the United States took advantage of its option to build the Libby project. The structures in question are shown on the left hand side of appendix I in your copies of the report.

As was pointed out in the 1959 report of the international Columbia river engineering board, however, there is an alternative scheme of development for the Kootenay river whereby the desired flood control in the United States section could be obtained by structures confined to the Canadian side of the border and the power benefits obtained through diversion into the Columbia. In this alternative, the Libby reservoir would be eliminated, and a reservoir substituted across the Columbia-Kootenay height-of-land in Canada between a dam at Luxor on the Columbia and a dam at Bull river on the Kootenay. In other words, there will be a dam at Bull river on the south flowing Kootenay, a dam at Luxor on the north flowing Columbia, and a continuous lake created across the height-of-land. This scheme would provide 4,032,000 acre feet of usable storage in the Bull river-Luxor reservoir.

In view of repeated references to the Dorr-Bull river-Luxor alternative in public debate, it may be of interest to compare it with the treaty projects. The two schemes of development are shown diagrammatically on appendix II, and the geographical locations of all projects are shown on appendix I. This is a straight line block diagram. It corresponds to the geographical representation of the two plans on appendix I.

In order to compare the two alternative schemes of development financially, it is first necessary to plan the sequence of power developments in each case that would best meet the load of the interconnected power systems of British Columbia. This planning has been done on the basis of the following assumptions. In order for us to compare the so-called treaty program and the so-called alternative program as business ventures, it has been necessary for us to project the growth of power demand in British Columbia and to adapt the development of each of the two schemes to that growing load. This planning has been done on the basis of the following assumptions:

- (a) That the electric power load of the British Columbia systems will grow at 6.1 per cent per annum for the next 30 years.
- (b) That the Canadian section of the Pend d'Oreille river will be fully developed. Schematically it is shown here. You have had the Pend d'Oreille described to you repeatedly; it is a river which rises in the United States and on which there is considerable storage. It makes a short loop of about 16 miles through Canada before joining the Columbia. There are two excellent power sites on it, one of which has already been developed at Waneta and a second one upstream, the so-called Seven Mile site.

In order to plan the development of the treaty program on the one hand and the alternative program on the other, we have logically assumed that as a matter of course the Waneta plant installation will be completed and the seven mile plant will be constructed. We have also assumed that the loco thermal generating station at Burrard Inlet will be increased to 600 megawatts. That is a logical assumption. Planning for the four 150 megawatts is already completed and construction started. The resulting programs are illustrated on appendices III and IV.

Mr. DAVIS: In the financial calculations was it assumed that Canada's entitlement to the downstream benefits was sold in the United States?

Mr. SEXTON: Yes.

Mr. DAVIS: In other words, this is an assumption common not only to the treaty plan but to the alternative plan—that income is credited to both projects?

Mr. SEXTON: Indeed that is correct, Mr. Davis.

We have no slides for appendices III and IV because they are rather extended. The horizontal scale is time beginning in the year 1963 and extending through to 1996. The vertical scale is millions of kilowatts. The two sloping lines are the forecast of British Columbia's load growth on the basis of 6.1 per cent per annum. The lower line represents the forecast growth in demand of energy, and the upper sloping line represents the forecast of growth in peak load demand.

On appendix No. III we have, to the best of our ability, prepared a program of development following the treaty storages to meet this load demand. You will notice the vertical lettering at the bottom of the sheet. The first item is, of course, Waneta No. 3; that is underway now. The next is the third 150 megawatt steam unit at Ioco in 1965. Then follows Waneta No. 4 in 1966, Ioco No. 4 in 1967, etc. By 1968 you have Duncan lake. I think it is on April 1, 1968, that Duncan lake is to be completed. Then you have Arrow lakes following in 1969. Also in 1968 you have the first two units of Portage mountain—that is the Peace river project—coming on the line, and so forth.

I would call your attention to the fact that in 1977 we show the east-west transmission tie between the west Kootenay district and the remainder of the lower British Columbia mainland. In 1879 the first units at Mica creek come along. From there on Mica creek is fully developed by 1983; and the four units of the Revelstoke canyon in 1984, etc., followed by Downie, Canal Flats, and the last Murphy creek and the Seven Mile Plant. In other words, this is a complete program of development of the Canadian Columbia in collaboration with other projects already underway.

A similar thing has developed for the alternative plan based on the Dorr-Bull river-Luxor. I should point out that the step line above the floating line in each case indicates the firm or dependable capability made available by the sequence of construction described in the vertical wording below.

May I refer briefly to our concept of the alternative plan? It again starts with Waneta No. 3 and continues with the Ioco No. 3, Waneta No. 4, etc. You will notice, of course, there is no Arrow lakes in the alternative plan and that instead there is the Bull river-Luxor stage one development coming in in 1970, the Bull river-Luxor pump turbines in 1973; and I think Dorr does not come in until 1988. This program is our concept of the most economic arrangement of planning that we can provide for the alternative.

Mr. CHATTERTON: Does that sequence coincide with the sequence that General McNaughton would propose?

Mr. SEXTON: It differs slightly, and I should explain it. When we were asked to study the alternative, Mr. Chatterton, which would be based on the Dorr-Bull river-Luxor plan, we searched the published information and could find no indication of what specific program that involved. As a matter of fact, it was only when we were in attendance here in the last few days that we learned it was exactly the sequence IXa. Hence, you may notice in the program we have devised here that Duncan lake is not included, whereas Duncan lake is included in sequence IXa. There is a very good reason for that: we tried it both ways and we found that the over-all cost was slightly less if we left out Duncan lake. Therefore, in order to be on the safest ground, we omitted it. You will also notice that Calamity curve is not shown. I believe since the drawings were prepared there has been an increase in the full supply level contemplated for Mica which would eliminate Calamity curve. Those are the two principal differences, I believe.

Mr. BYRNE: May I ask for a point of clarification on appendix III?

The Canal Flats diversion anticipates the power that would be generated at Mica, Downie and so on as a result of the diverted water?

Mr. SEXTON: The Canal plant.

Mr. BYRNE: You have the Canal Flats diversion. Should that be Canal plant?

Mr. SEXTON: No, the Canal Flats is coming on after 20 years.

Mr. BYRNE: That anticipates the power that would be generated at Mica and others? There is no power at Canal Flats?

Mr. SEXTON: There is no power at Canal Flats. However, it does increase the supply, 1½ million acre feet of water through Mica creek.

Mr. PUGH: What flooding would take place on this Canal Flats diversion?

Mr. SEXTON: No flooding.

Mr. PUGH: It is merely a diversion of the river?

Mr. SEXTON: It is merely a diversion.

Both programs begin with the addition of the third unit at the Waneta plant on the Pend d'Oreille river in the present year and end with the completion of the Murphy creek plant on the Columbia and the seven mile plant on the Pend d'Oreille in the final year. In the case of what we shall hereafter call the treaty plan, the final year would be 1988. In the case of the alternative plan, it would be 1989.

Now we propose to proceed to section 6 which is an analysis of the treaty program as a financial transaction. While the initial objective of the treaty and the protocol is the construction of three storage dams in Canada to create downstream benefits in the United States, and the sale of Canada's share of those benefits to the United States, the ultimate objective must be the maximum economic development of power from the Canadian Columbia river for use in this country. The average cost of this ultimate power to Canada can now be estimated by a relatively simple series of computations, since the uncertainties of long term downstream benefits have been removed by sale of

those benefits for a lump sum payable in advance in accordance with the terms of sale incorporated in the protocol.

First, however, it is necessary to establish two items in order to proceed with this financial analysis. First of all we need a rate of interest for Canadian investments; and second, we need the length of time over which such investments should be amortized.

A record of interest paid on long term federal government bonds since 1960 is given in appendix V. It indicates that an average annual rate of 5 per cent would be satisfactory for Columbia river financial computations. There is a brief tabulation starting with 4.97 per cent—no, it starts 5.15 per cent in 1960 and then drops to a low of 4.82 per cent in April of 1962 when it rises again to 5.18 per cent in 1964. I am informed that the latest sale of government bonds was made at a price of about 5.4 which indicates an average annual rate of 5 per cent would be satisfactory for Columbia river financial computations.

Upon examining this tabulation and seeing these fluctuations it seemed to us that 5 per cent was a logical figure to project for 50 years in the future. Nobody can guarantee this, but it appears reasonable to us.

As for amortization, only the hydroelectric structures and installations are involved, and these have a long life. In accordance with established practice it should be satisfactory to write off all power plants over 50 years. The treaty storages should be amortized during the life of the treaty. All costs will be computed to their value in 1973, the year in which it is estimated that construction of all three treaty storages will be completed. Expenditures for the storages and the power plants prior to 1973 will be accumulated at 5 per cent compound interest per annum, while those after 1973 will be discounted at the same rate. In other words, we will bring the financial transactions of these 50 or 60 years to the one year 1973, which is the year when the treaty storages will be completed.

The cost computations are summarized in appendix VI. I should point out that while the underlying computations are tedious, the actual application of them in summary is quite simple, as I trust we can demonstrate to you with the tabulation in table 6.

The summary of course is the very last figure. The computation referred to is a computation of the average cost of Columbia river power to Canada as a result of the treaty and it is shown to be 1.90 mills per kilowatt hour.

The cost computations of appendix VI are based on the latest estimates available from recent studies. Operating costs make generous allowance for local taxation and rental payments to the government of British Columbia. Energy outputs are based on firm power production calculated from the record of streamflows.

A price of 1.9 mills per kilowatt hour before transmission is indeed attractive for firm power available to the extent of some 21 billion kilowatt hours per year when the Canadian Columbia is fully developed. Transmission to the load centers could be expected to add 1.5 to two mills per kilowatt hour to this cost.

I might say that when we put that figure in of one and one half to two mills, we were thinking primarily of 345 k. vs. transmission. But reconsideration in the light of the fact that the Peace development is now in the picture, and that transmission in all probability will be at least 500 kilowatts, I think it is safe to say that we could reduce these transmission costs possibly by one half a mill.

I must be remembered however that 1.9 per kilowatt hour is the over-all cost to Canada resulting from two separate and distinct phases of Canadian Columbia river development.

Probably before we pass on to those phases it might be well to pause a moment and explain what we have done here.

The firm column is simply a statement of the latest estimates, the capital cost estimates for the various structures involved, and this is simply the year in which they can see these coming on the line. After this double line we begin our financial computations.

Mr. CHATTERTON: Have you yourself checked those estimates, or accepted them as presented to you?

Mr. SEXTON: We checked and revised the one for the Bull river—Luxor, but the others we accepted from the latest information available from the British Columbia Hydro and Power Authority.

The third explains Downie and Revelstoke. We used our own estimates, as we saw the problem in 1963.

Here in the first column, as you can see, the computation is a simple statement of the receipts which Canada will receive. The first receipt of course is for the lump sum payment in October 1964 for downstream benefits. That has been varied to Canadian dollars at \$274,800,000 and brought forward to 1973 at 5 per cent when it becomes \$416,150,000.

The next receipt is for payment for flood control, and this would be Duncan lake. The actual cash payment is \$11,974,000 in 1968, and it becomes \$15,270,000 when brought forward to 1973.

Similarly, here is the payment for the Arrow lakes storage which is given at \$56,203,000, and which when brought forward to 1973 becomes \$68,290,000 and so on.

And here is the last payment for Mica creek.

Mr. PUGH: Why is that shown at \$1,295,000? Is that in Canadian funds?

Mr. SEXTON: I am sorry, but that is a discrepancy. I think this has been rounded off to the closest four terminal zeros, but that discrepancy should not exist because obviously 1973 is our best year.

The next column gives us the capital cost again reduced to 1973 or brought forward. For example, the Duncan lake reduced figure available is \$33,327,000 in 1968, and when brought forward to 1973 it becomes \$42,500,000. Similarly with the Arrow lakes now estimated at \$129,000,000 in 1969 but which becomes \$157,500,000 in 1973 and so on.

And when you get down here to some of these projects, you will see that the costs are constructed on our best years to 1973. Here we have taken the operating costs of each of these plants; then we have brought them all back to their worth at 5 per cent in 1973.

In other words, take the various treaty storages. They will be operated between 1968 and 2024. There is a certain estimated annual amount that will be spent for operation and maintenance of those storages. By discounting all those amounts back to 1973 and adding them up, you get \$47 million. Similarly, we discount to 1973 the lifetime operating costs of these various installations.

Further, with the same reasoning we now get to the output of these plants, each one of these plants; for example, the west Kootenay plants are the first plants to produce. They will produce a certain amount of power each year over the life of this treaty. That annual amount of power is brought back to 1973 at a discount of 5 per cent in order to place it on the same basis as the best figures.

Adding those up, the sum total of those receipts is \$501 million on the basis of 1973. We might omit this; however, this is the residual distribution. By the terms of sale, the sale lasts for 30 years after the completion of each storage and then you have certain residual benefits which revert to Canada. When you consider those benefits on the basis of 1973 at the price committed in the treaty, that gives a total of \$522 million. Against that you have your

receipts, your capital cost and your lifetime operation costs. This figure, \$820,850,000 is the sum total of your capital outlays. Add to that \$188,620,000, which is the sum total of your operation costs brought to 1973, subtract from that the \$522 million, the sum total of your receipts, and multiply by 1,000 to bring it to mills, divide by this figure here—after all, this is in billions of kilowatt hours—and you get 1.9 mills per kilowatt hour.

This transaction, however, can be divided into two distinct phases which I would like to proceed to examine now. Phase I begins in 1964 when Canada could be considered as building three storage reservoirs, partly for sale of the resulting flood control and power benefits to the United States, and partly as advance investment in future power generation in Canada. Neglecting the increased generation at the west Kootenay plants resulting from Duncan lake storage, the only income applicable to this phase would be the treaty payments received from the United States.

In other words, I would like to take as the first phase in this business transaction the agreement with the United States whereby Canada builds three storages and sells the downstream benefits to the United States. The subsequent installation of power plants in Canada is the first phase.

Then we go on to state phase II, beginning on the west Kootenay river in 1969 with the installation of the fourth unit at the Brilliant plant, and in 1979 on the Columbia river with the commissioning of the first two units at Mica creek, when Canada would start to make use of its advance investment in the three treaty storages.

That is the second phase. This is an important concept. I trust you will pardon me if I linger on it a moment. In the first phase, when Canada undertakes to make a very big expenditure on investment in treaty storages, those storages have a dual purpose; in part they are for the generation of power in the United States; in part they also are an advance investment by Canada for its own use in the second phase when Canada begins to instal power on the Columbia river to use the water that is available.

The first phase is a clearcut business agreement whereby Canada will make certain investments on behalf of the United States and receive specific compensation. It is a relatively simple phase to analyse. It is of interest to determine the effect of this transaction in the ultimate cost of power to Canada. If we can analyse this first phase successfully, we will have the answer.

As suggested in the description of phase I, when Canada builds the storage dams at Mica creek, Arrow lake and Duncan lake in accordance with the terms of the treaty, it is equivalent to making an investment partly on behalf of the United States for storage to be used through American plants downstream, and partly as an advance investment in storage that will eventually be used by Canadian plants downstream. A simple allocation of these costs is to consider the cost of each reservoir divided between Canada and the United States in proportion to the feet of head through which the storage will eventually be used in each country. In other words, Arrow lakes, for example, eventually will be use dthrough 1,153 feet of head in the United States. It will only be used through 56 feet of head in Canada.

MR. MACDONALD: Is that Murphy creek at 56 feet?

MR. SEXTON: That is Murphy creek. But, if costs are allocated in that way, we could say 4.6 per cent of the cost of Arrow lakes storage is made by Canada as an advance investment. Similarly, take Mica creek. This is all in the table on the middle of page 11. Again, the stored water in Mica creek will be used through 1,153 feet in the United States and will be used through slightly less in Canada, 1,053 feet. This results in a cost of 47.7 per cent as an advance investment by Canada and a 52.3 per cent investment on behalf of the United States; and similarly with Duncan lake.

Since the three component flood control payments are to be made by the United States as each respective reservoir is completed and placed in service, it will simplify the computations if the cost of each reservoir to Canada is taken as the net cost after subtraction of the flood control payment. In other words, immediately upon completion of Duncan lake, the flood control payment for the Duncan lake storage becomes due. Hence, for simplification of computation it is preferable to take the cost of Duncan lake as the net resulting from the subtraction of the flood control payment. That is shown in the table at the bottom of page 11. Duncan lake, for example, is estimated to cost \$33,327,000, but immediately a payment of \$9 million and almost \$12 million becomes due, hence the net cost to Canada is \$21,353,000.

These net costs to Canada then can be allocated between Canada and the United States in proportion to heads of utilization, and adjusted to 1973 values. That is done at the top of page 12. Beginning with Mica creek, we have taken the net cost to Canada which, from the preceeding page, was \$243,905,000, and we have divided it between the United States and Canada in the ratio of 47.7 per cent to Canada and 52.3 per cent to the United States, as indicated in the tabulation at the middle of page 11.

The results for Mica, Arrow lakes and Duncan lake are illustrated at the top of page 12. In other words, Canada is making, in effect, an advanced investment of \$128,462,000 in anticipation of its own development of power, and is also making an investment of \$234,456,000 on behalf of the United States when it builds the three treaty storages. In order for Canada to break even with this transaction, the payment for downstream power benefits received from the United States should be adequate to cover certain expenses. Now, this is very simple; it should cover the entire cost of the outlay we are making on behalf of the United States, which is set out in item (a), the cost of the United States' share of Canada's investment, in other words, \$234,456,000. It also should cover the United States share of the operating costs of the three treaty storages for the life of the treaty, again assumed to be allocated in proportion to the head of utilization. Lastly, it should be adequate for the carrying charges on Canada's share of the investment, which is \$128,462,000, and Canada's share of the operating costs of the three treaty storages until Canada begins to use these storages for generation of power in Canada. These three items are tabulated at the top of page 13. The United States share of the capital cost is a straight repetition of the figure given at the top of page 12.

The second item is the aggregate worth, discounted to 1973, of the United States share of storage operating expenses to the year 2024, which is the end of the treaty life, and which amounts to \$40,732,000; the third item is the aggregate worth, again discounted to 1973, of the fixed charges of Canada's share of the capital costs until the structures can utilize all of it, which is \$3,948,000; and the fourth item is the aggregate worth on the 1973 basis, of Canada's share of operating expenses until structures are utilized in Canada, which is \$3,885,000. The entire total is \$323,021,000, and that is the amount which Canada must recover in this business arrangement with the United States if Canada is going to break even on phase 1 of the treaty. Actually, the United States payment to Canada of \$234,456,000 (U.S.) in 1964 will have accumulated in 1973 to \$416,150,000 in Canadian funds. Hence, it is estimated Canada will have a surplus of \$93,129,000 in 1973, as illustrated on page 13, again a simple matter of subtraction.

The \$416,150,000 is the receipt from the United States; the \$323,021,000 is the summation of what Canada must get to break even. Expressed in another way, this surplus is sufficient to raise the interest rate on the investment made by Canada on behalf of the United States from 5 to 7½ per cent; in other words, Canada made an investment of \$234,456,000 on behalf of the United States and

this surplus of \$93 million is enough to raise the return on that from the 5 per cent we assumed to $7\frac{1}{2}$ per cent. However, regardless of the interpretation, the net effect is to reduce the cost of power derived from development in Canada.

Appendix VII is the tabulation through the year 2039 of the estimated year by year cost of power from the development of the Canadian Columbia river before allowing for the sale of Canada's share of the residual downstream benefits and before allowing credit for this surplus of \$93 million. In other words, we now are analysing the second phase of this proposition whereby Canada is developing its own power on the Columbia river. Again, while the background computations are tedious the computation in outline is extremely simple. The last five columns summarize the analysis of the financial transaction. I might say the first three columns merely list the capital expenditure on the basis of 1973 that Canada must make for each of these storages.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Which appendix is that?

Mr. SEXTON: Appendix VII.

Mr. DAVIS: For our information, Mr. Sexton, do we have a total of the capital investment for the treaty project sequence and for the alternative, and do you have it by project?

Mr. SEXTON: Yes, we can summarize that for you, Mr. Davis.

Mr. DAVIS: It would be useful to know which was the most expensive in terms of capital outlay.

The CHAIRMAN: Would it be agreeable that that information be added to our minutes?

Some hon. MEMBERS: Agreed.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): That will be all right as long as it does not hold the printing up too long.

Mr. DAVIS: It will not; it is just a matter of adding the columns.

Mr. SEXTON: This is a relatively simple thing. The only reason we cannot take it directly from the chart we put on the screen is that those very costs were taken to 1973.

The column headed number 15 is merely a tabulation year by year of the expected fixed charges on the investment that Canada must make in power to follow out the program of Columbia river power development. Column 16 is the total operation and maintenance charges and, in column 17 the two are added; in other words, column 17 is merely a summation of columns 15 and 16. Column 18 is merely a statement of the year by year output of firm energy from the Columbia river power projects in Canada, and the final column is a statement of the resulting costs year by year in mills per kilowatt hour.

You will see that column (19) starts off at the remarkably cheap cost of 0.64 per kilowatt hour, which must result from Waneta. It goes through the years and ends up at 2.86 mills per kilowatt hour for the final year.

The unit costs vary from 0.64 mills per kilowatt hour in 1968, which we pointed out at the top of column 19, to 2.86 mills per kilowatt hour in the year 2039, and the average cost is 2.35 mills per kilowatt hour. This average cost is reduced to 2.27 mills per kilowatt hour when credit is taken for Canada's share of the residual downstream benefits. It is further reduced to 1.90 mills per kilowatt hour with inclusion of the \$93,129,000, 1973 surplus from phase 1. Clearly, the terms of the treaty, the protocol and sales agreements are beneficial to Canada.

In other words, we have taken you through two separate phases: phase I in which we showed there was a surplus of \$93,129,000 on the transaction

with the United States; then we have gone through phase II and shown if phase II had to stand on its own feet its average cost of power would be 2.35 mills.

However, when you combine phase I and phase II you take advantage of that \$93 million surplus and you come down to the 1.90 mills per kilowatt hour which is identical with what you get in the other computation which we placed on the screen.

With your permission I should like to proceed to the similar analysis of the alternative program which appears as item No. 7 on page 14.

The same method of analysis as used in the preceding paragraphs to analyse the treaty program as a financial transaction can now be used to make a comparative evaluation of the Dorr-Bull river-Luxor alternative program. First, however, it is necessary to estimate the flood control and power benefits of the alternative program in the United States, and the respective theoretical compensations for these benefits which might have been negotiated in an alternative treaty.

I should mention here, Mr. Chairman, that we have an errata sheet which shows that on the seventh line from the bottom at page 14 the word "it" should be eliminated. There are a number of errors like that which I should like corrected. In order that the results may be as objective as possible from the Canadian point of view, it is assumed that the compensations would vary directly with benefits. The hypothetical compensations for flood control are derived in Appendix VIII, and for power benefits in Appendix IX. The results are summarized below.

You may refer to appendices VIII and IX if you like but they are not quite as readily understood as the financial tables.

You will notice, dealing first with our hypothetical estimate of flood control payments for the alternative Dorr-Bull river-Luxor plan outlined at the top of page 15, we show \$52,200,000 for Mica Creek; \$24,100,000 for Bull river-Luxor, giving a total of \$76,300,000.

You will notice immediately that that is larger than the treaty flood control payments, and the reason of course is obvious. When you build the Bull river-Luxor project you create flood control benefits on the lower Kootenai in the United States which in part replaces those which the United States would get from the Libby project.

I should explain here that part of this hypothetical value of \$76,300,000 is derived from a consideration of Mica in conjunction with the natural flood storage at Arrow lakes.

Approximately \$3,500,000 of this amount is assumed to be derived from flood control on the United States loop of the Kootenai river.

The greater use of the Mica creek storage for flood control in the alternative program would deprive that reservoir of some of the flexibility for power operation that it possess under the treaty. It is difficult to evaluate this disadvantage, hence it has been ignored in subsequent computations of power supply.

Mr. MACDONALD: These estimates are made on the assumption that the Bull river-Luxor site is given first added position by the United States in any calculation?

Mr. SEXTON: Yes.

Mr. MACDONALD: That is a large assumption.

Mr. SEXTON: In order to set up a hypothetical alternative for Bull river-Luxor, we have probably had to take liberties with reality. We have had to assume certain difficulties have been overcome and certain acquiescence on the part of the United States which we are probably not entitled to do. However, in so doing we are attempting to set up this hypothetical alternative.

In the interests of objectivity we have given them the benefit of doubt wherever there is a doubt rather than raise arguments.

I mentioned the greater use of Mica creek.

Mr. MACDONALD: And that is another example?

Mr. SEXTON: Yes, we remove some of its flexibility for power operation but we do not take that into account.

We now come to the computation in respect of the theoretical downstream power benefits.

The computations indicate that Canada would receive a lump sum payment of U.S. \$200,610,000 on October 1, 1964 as compensation for sale of the Canadian share of the downstream power benefits in the alternative program. This is less than the treaty amount of \$254 million because the downstream power benefits are less and we are assuming a payment directly proportionate.

After subtracting the estimate flood control payments from the estimated capital costs of the Bull river-Luxor, Mica creek and Murphy creek storages, then allocating the resulting net costs between Canada and the United States in proportion to the heads through which the storages would be used in each country, the following division of costs in Canadian dollars is obtained.

In other words, we are, with the alternative program, following the identical line of reasoning. We have computed the flood control benefits. We have allocated them between Bull river-Luxor and Mica. We have subtracted them from the estimated costs to arrive at a net cost to Canada for each of these two storages and then we have divided that cost in each case between Canada and the United States proportionately to the heads through which they will be used in each country. The results of that tabulation are given at page 16.

Following the same reasoning as in the case of the treaty program, Canada would have to receive \$302,467,000 in 1973 to break even on phase I of the alternative development. The details are given here. Canada would have to receive the entire share made on behalf of the United States which is \$225,634,000. Again there would be the aggregate worth based on 1973, of the United States share of the operating expenses. Again there would be the aggregate worth share of the fixed charges until Canada started to use its reservoirs, and again there would be the aggregate worth of Canada's share of the operating expenses until Canada started to use them. That adds up to \$302,467,000.

Actually the United States payment of \$200,610,000 in 1964, this hypothetical payment for downstream benefits which we have derived, would have accumulated to a value of \$327,726,000 in 1973, and Canada would have had a surplus of \$25,259,000 on the transaction in 1973. This is a comparison with the \$93 million surplus on the treaty program.

This surplus would be sufficient to raise the interest rate on the investment made by Canada on behalf of the United States from five per cent to five and three quarter per cent.

You will recall when we analysed the treaty program we found that the surplus would be sufficient to raise Canada's investment on behalf of the United States from five per cent to seven and a half per cent.

The costs of power that would result from phase II of the alternative program are tabulated in Appendix X year by year through 2039. This is very similar to the corresponding tabulation for the treaty program and deal of course with phase II.

Before allowing for return of sale of Canada's share of the residual downstream benefits, and before allowing credit for the \$25,259,000 surplus derived from phase I those costs are tabulated. These figures appear at page 1 and are computed on that basis.

The unit costs vary from 2.49 mills per kilowatt hour in 1969, which is the top figure in column 19, to 1.71 mills per kilowatt hour in the year 2039; the average cost is 2.36 mills per kilowatt hour. This average cost is reduced to 2.31 mills per kilowatt hour when credit is taken for Canada's share of the residual downstream benefits. It is further reduced to 2.21 mills per kilowatt hour with inclusion of the \$25,259,000 surplus from phase I. The computations of these costs are illustrated in appendix XI. Appendix XI is a tabulation that corresponds to appendix VI of the treaty program. However, for ease of comparison, the results of the financial analyses of both the treaty and alternative programs are summarized below:

| | Treaty Program | Alternative Program |
|--|-------------------|------------------------|
| Surplus resulting from investments made on behalf of the United States in Phase I—1973 value | \$93,129,000 | \$25,259,000 |
| Corresponding rate of interest on investment made on behalf of the United States .. | 7½% | 5¾% |
| Firm power available from power developments on the Canadian Columbia River—billions of kwh per year | 21.12 | 22.97 |
| Residual downstream benefits after 2009—energy only—billions of kwh per year .. | 1.63 | 1.24 |
| Average cost of power from development of Canadian Columbia in Phase II before application of surplus from Phase I | 2.27 mills/kwh | 2.31 mills/kwh |
| Overall average cost of power | 1.90 mills/kwh | 2.21 mills/kwh |

In 1989, when in accordance with the load forecast of appendices III and IV the firm power output of either the treaty program or the alternative program would be fully utilized, the former would produce 21.12 billion kilowatt hours per year at an over-all average annual cost of \$40,128,000; that is, the treaty program when it comes to the year 1989, when everything is installed, will be producing firm energy to the extent of 21 billion kilowatt hours and it will take an annual outlay of \$40 million; whereas the alternative program would produce 22.97 billion kilowatt hours per year and would require a corresponding outlay of \$50,764,000. The difference of 1.85 billion kilowatt hours per year between the two programs could be made up by thermal generation at the load centre and still show a saving of about \$3 million per year in favour of the treaty program.

I should now go back to the assumption we have had to make. Moreover, in order to facilitate the above comparison it has been necessary to ignore some basic operating problems of the alternative program which would undoubtedly reduce its firm energy output below the level assumed. For example, the Mica creek reservoir has been assumed operated for maximum Canadian production with no loss of downstream benefits in the United States, in spite of the fact that only the 2.83 million acre feet of the Murphy creek reservoir would be available for re-regulation. Later in this submission the improbability of such an assumption will be demonstrated by analysis of treaty program operation. It has also been necessary to assume several million acre feet of

storage in the Mica creek reservoir allocated to flood control, as compared with the 80,000 acre feet of the treaty. This would further reduce the flexibility of Mica creek operation, and at the same time make it difficult to refill both the Mica creek and the Bull river-Luxor reservoirs after periods of critical streamflow. That is the second assumption we have had to make.

It must also be remembered that the assumed feasibility of the alternative program ignores at least two important factors:

- (a) The government of British Columbia has already rejected the flooding of land in the east Kootenay valley for the creation of a large reservoir.
- (b) The United States has clearly stated that it wants the flood flows of the Kootenay river controlled to 60,000 cfs at Bonners Ferry and that it is not interested in control to a lesser degree, whereas credit for such reduced control has been assigned to Bull river-Luxor in the above analysis.

We have had to ignore that objection on the part of the United States.

Mr. BYRNE: On a matter of clarification, in the event that Bull river-Luxor were built, am I to understand that there would not be sufficient control as a result of that storage to lessen the streamflow to 60,000 cubic feet per second at Bonners Ferry, that is waters joining the Kootenay below the Dorr site would not be sufficiently controlled?

Mr. SEXTON: That is right; the Dorr-Bull river-Luxor would not control the flow of the Luxor-Kootenay to 60,000 cubic feet per second. I might add that there is a further consideration here which we have had to overlook. I believe the United States authorities in the course of the negotiations have also pointed out that if they gave up Libby they would wish to receive 275,000 kilowatts of power at a certain low cost corresponding to the Bonneville power administration costs.

Mr. DAVIS: Did you not include that penalty?

Mr. SEXTON: We did not include it; we overlooked it.

Mr. PUGH: I have a further question for clarification. The Dorr is the lower dam on the Kootenay in the alternate plan. Is the inflow into the Kootenay below the Dorr great enough to produce trouble at Bonners Ferry above the 60,000 cfs?

Mr. SEXTON: You would still have inflow to the Kootenay above the Dorr. You would only have the benefit of the 1.9 million acre feet in the Bull river-Luxor reservoir. My friend Mr. Wilschut reminds me that the control is inadequate in the first stage to produce the 60,000 cfs. The first stage is where you build the Bull river reservoir.

Mr. RYAN: Could we have that a little louder, please.

Mr. SEXTON: I am sorry. I wonder if it would not be a good idea to put our slide on the screen again.

Mr. BYRNE: There is some confusion here.

Mr. PUGH: In other words, the United States feel it is absolutely necessary to have Libby to get that complete control?

Mr. SEXTON: My understanding is that they are not interested in less control than 60,000 cfs at Bonners Ferry and that the program we have devised here in which we have a first stage of development of storage on the Bull river-Luxor followed by the final stage would not provide the degree of control at the beginning.

I should explain the stages we have taken here in the interests of the most economic development of the alternative program.

We have, first of all, given the Bull river-Luxor stage one, which is the creation of storage on that reservoir between Bull river and Luxor. Our next stage is the addition of pump turbines at Bull river; and the final stage is the addition of the power—also Dorr, down here on the diagram.

Mr. KINDT: Would these be multi-purpose dams with electricity, irrigation and other uses built into them?

Mr. SEXTON: They would certainly be for the production of power, and such other multiple purpose aspects could be built if required.

Mr. KINDT: I have one other question.

Are the figures which you are giving based on multiple purpose uses?

Mr. SEXTON: No, upon pure power.

Mr. KINDT: Strictly power?

Mr. SEXTON: Strictly power.

Mr. KINDT: Then, if it is strictly power, you have not taken into consideration any of the tangible or intangible benefits?

Mr. SEXTON: No.

Mr. BYRNE: In neither case?

Mr. SEXTON: No.

Mr. HERRIDGE: You have not taken into account the constitutional, sociological, aesthetic, recreational or human values whatever?

Mr. SEXTON: No.

Mr. BYRNE: My question, when I interrupted, was simply to clarify the words:

—60,000 c.s.f. at Bonners Ferry and that it is not interested in control to a lesser degree.

We are trying to determine whether this meant there would not be sufficient control without Libby to provide that safeguard. Is that so?

Mr. SEXTON: We will get that cleared up to your satisfaction.

I should point out to you that the diagram in the report as we had hoped to prepare it was coloured like the one I am holding up now. In that colouring we show that the initial stage of Bull river is merely storage on the Kootenay river alone and does not extend all the way back to Luxor. Hence, in that initial stage, which begins in 1970, and does not come to an end until 1987, there is inadequate storage on the Kootenay to provide the same control as would be provided by Libby.

Mr. PUGH: I have just one last question.

The 60,000 c.s.f. at Bonners Ferry is for flood control purposes only and not for power?

Mr. SEXTON: Flood control; that is a maximum. The United States wishes to keep the flood to that maximum.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I was wondering, Mr. Sexton, if you could give us the authority for your statement on page 19 in paragraph (b). I am interested in this because we have been unable to obtain any information about the negotiations or attitudes of the United States from government witnesses on the stand. I would like to know what the authority is for the statement. I believe the United States authorities have granted compensation for the loss of Libby and so on.

Mr. SEXTON: We have been dependant, of course, upon the information supplied to us by our clients; and this information did come to us from our clients, the Canadian government. As Mr. MacNabb points out, this comes from the discussion of flood control principle No. 2 as contained in the International Joint Commission principles.

Mr. MACDONALD: With regard to Mr. Cameron's second question about the payment as an alternative for moving Libby, that is covered at page 68 of the presentation.

The VICE-CHAIRMAN: I do not believe Mr. Sexton has completed his presentation and I have a list of a number of members who have indicated that they wish to ask questions.

While one or two questions are certainly helpful as we go along, I think this has to be played by ear. In order to make progress I would request the committee not to ask too many questions; otherwise it will be difficult for Mr. Sexton to complete his presentation this afternoon. I would therefore ask the forbearance of members of the committee in this regard.

Mr. KINDT: In order to know what is in the figures I would like to clear up one additional question.

The VICE-CHAIRMAN: Dr. Kindt.

Mr. KINDT: Were the negative benefits, whether tangible or intangible—and you know what I mean there—deducted out of the benefit figures which you are now giving us? In other words, you have arrived at a power benefit figure and you are giving it in terms of dollars.

Mr. SEXTON: Yes.

Mr. KINDT: It stands out there like a sore thumb. That is only meaningful to those who are interpreting it provided that they know what are the negative values or the positive and the negative values in arriving at the cost benefit or net position. Do you follow me?

Mr. SEXTON: No, I am afraid I do not.

Mr. KINDT: In arriving at the figures for power benefits which you have given you have made a straight computation strictly for power?

Mr. SEXTON: Yes.

Mr. KINDT: And you have taken nothing else into consideration? You have not taken into consideration tangible or intangible benefits? You have deducted out nothing? You have modified those figures to no extent whatever by these other factors?

Mr. SEXTON: In regard to tangible and intangible benefits, I must state that in my opinion when you are developing a river for power that is your primary objective. There has grown up a practice of assigning certain intangible benefits, sometimes to power, in order to show that its cost is lower than it actually is. However, to really compute the intangible benefits derived from a lake or for boating or fishing is an extremely difficult thing, and one might almost say an imaginary thing, to do.

Mr. KINDT: When you say it is strictly for power, that is strictly what your study deals with on the Canadian side?

M. MACDONALD: And flood control.

Mr. KINDT: And flood control, is it?

Mr. SEXTON: Yes.

Mr. KINDT: Then you have benefits in addition to power. Did you put in the other benefits? If you are including flood control on one side as a benefit—

Mr. SEXTON: Yes.

Mr. KINDT: When you flood land there are negative benefits. What I am asking is this: did you deduct out those negative benefits in your working figures?

Mr. SEXTON: Oh of course, the full cost of the land is taken in the capital cost of the project. That is the way you take the cost of your so-called negative benefits. You charge for the land and put that into the capital cost of the structure.

Mr. KINDT: And the market value of the land represents the negative value?

Mr. SEXTON: In my opinion, yes.

Mr. KINDT: I shall leave my question there for the moment.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I think Mr. Macdonald misunderstood what I was asking for at page 68 in the reference. The only point I wanted to bring out was that you have been in a position to give us some idea of the negotiations which went on with regard to the Libby dam which we have not been able to receive from any other source. You are apparently more in the confidence of the government than is this committee.

Mr. DAVIS: I thought it was understood at the very beginning that the government representatives both federal and provincial would go through their briefs in detail, but that subsequent evidence would be submitted seven days in advance and that we would receive a summary from the witnesses and they would be available for questioning. In view of the fact that six o'clock is not far away, might the remainder of this brief be summarized rather than read extensively into the record?

The VICE-CHAIRMAN: I think that is a very good suggestion. Would you be prepared to do that?

Mr. SEXTON: Yes, I shall do my best for you.

The VICE-CHAIRMAN: I think it might expedite matters and enable us to get down to more detailed questioning after you have finished.

Mr. SEXTON: The next item I would like to deal with is the question of the benefit of the Libby project to Canada. It has already been stated that Libby will have a sizeable storage of 5,010,000 cubic feet.

Mr. RYAN: Might I point out that information was disclosed about the 60,000 cubic feet per second at Bonners Ferry at page 53 of the green book.

The VICE-CHAIRMAN: Unless questions are immediately apropos I would request members of the committee to save their questions or observations until Mr. Sexton has summarized his report. I must ask the committee to co-operate in that regard. There will be a lot of time to ask questions after and to make observations. We must get on with the report.

Mr. SEXTON: This situation on the Kootenay river will be somewhat similar to that of the Pend d'Oreille in which, on the Pend d'Oreille, the United States has extensive storage as I mentioned before, and that river passes through Canada. Therefore Canada is able to take advantage of it. It is this storage on the Pend d'Oreille that has made it economical for Consolidated Mining and Smelting Company to build its Waneta Plant, which will enable it, or some authority, to build the seven mile plant.

As has been pointed out by others when giving evidence here, Pend d'Oreille storages are United States property and they are regulated and used to suit United States purposes. This means that when the flow is high on the main stem of the Columbia, the United States holds back Hungry Horse and other storages and bring them down when they need them. This causes certain variations in the output of the Waneta plant, and that difficulty with Waneta, as you can see, will be made good this year by interconnection between Caminco and the Bonneville Power Authority at Spokane whereby when there is a surplus at Waneta it can be sent to the United States, and when a deficiency occurs at Waneta, a reverse flow will occur.

The situation at Libby will be easier than it is at Waneta. Probably I should stop a moment at Waneta and point out that while the operation of the United States storage on the Pend d'Oreille has caused certain difficulties to the Consolidated Mining and Smelting Company at Waneta, these same storages are what has made possible construction of Waneta at all. I mean

that the Consolidated Mining and Construction Company constructed Waneta knowing full well what they could get out of it, and what they are doing today. The difficulty is to be overcome with the interconnection. That difficulty will not exist to the same extent on the Kootenay, and I mention the reasons why at the top of page 21.

In the first place, 93 per cent of the flow of the Pend d'Oreille entering Canada is subject to control by upstream reservoirs completely within United States jurisdiction, whereas in the case of the Kootenay, the United States will have complete jurisdiction over the Libby storage and partial jurisdiction over the Duncan lake storage, which, together, constitute 53 per cent of the flow through the Canadian plants.

And the second point is that there are 673,000 acre feet of storage on Kootenay lake in Canada to effect a measure of re-regulation of Libby discharges, for the west Kootenay plant. In other words, the United States discharges are not arriving directly at the Canadian plants. They are first going through Kootenay lake which has, itself, some six feet of regulation which will help to smooth out the rate of discharge.

Mr. BYRNE: These are discharges for power production?

Mr. SEXTON: The level of Kootenay lake must be maintained within the limits set by the International Joint Commission. We feel that these three factors will facilitate complete utilization of Libby storage through the west Kootenay, providing the Caminco plants are interconnected in due course with the British Columbia Hydro and Power Authority system to effect a relatively small exchange in power.

Now we have examined that situation, our engineers have analysed it using the operation of Libby as determined from the United States computer studies. I think I should read exactly what we have to say here about the Bonneville power administration.

The Bonneville power administration has made computer studies for maximum generation in the United States taking into account the operation of the Caminco plants both before and after the addition of Libby storage. Hence it is possible by reference to the results of these studies to evaluate the minimum benefits which would accrue to Canada from the operation of the Libby reservoir.

In other words, taking the way in which they say they would operate Libby, this is a further benefit, and we could find how much power they would make available for the west Kootenay. And of course, in these same studies, Duncan lake is included, so we can evaluate Duncan lake at the same time. Duncan lake will add 59,000 average kilowatts of firm power, and Libby will add a further 208,000 average kilowatts. This is shown in the tabulation at the middle of page 22.

Existing west Kootenay and Pend d'Oreille plants plus the addition of unit no. 4 at Waneta represent 453 kilowatts, and when you add Duncan lake, that comes up to 508,000. In other words, you add your 59,000; and after the extension of the Brilliant plant, that goes up to 512,000, making a total gain attributable to Duncan of 59,000.

Then you go step by step, and after the first addition of Libby storage it goes up to 554,000, and then after the addition of Canal plant it increases the benefit to 691,000, and then at that point, from time to time you firm up with interconnections with British Columbia Hydro and Power Authority and you have again up to 208,000.

A gain of 208,000 average kilowatts in firm energy rating corresponds to an annual production of 1.822 billion kilowatt hours. The cost of this energy after paying operating and fixed charges on the Canal plant, the

extension of the Brilliant plant, and the cost of the Libby flowage in Canada would be 1.90 mills per kilowatt hour.

I am sorry but I find it difficult to summarize this thing because we have attempted to put our report in a rather brief form to begin with.

The VICE-CHAIRMAN: Perhaps you might care to comment on the report rather than summarize it as you go along.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I do not think it is being fair to the witness to ask him to summarize something which has already been summarized.

The VICE-CHAIRMAN: That is why I suggested it might be easier. As Mr. Sexton pointed out, he has summarized this previously.

Perhaps he might comment on the various parts in order to make them a little clearer.

Mr. KINDT: Mr. Chairman, there are only another 10 pages. Let us go on.

Mr. HERRIDGE: I think that would be fair to the witness.

Mr. SEXTON: I think I can hope to get my points across better if I can follow my text, Mr. Chairman.

The VICE-CHAIRMAN: In that case, proceed Mr. Sexton.

Mr. SEXTON: Thank you.

Dealing now with the other problem assigned to us, the adequacy of Canadian control over operation of the treaty storages. The operation of the treaty storages for maximum power benefits in the United States should present no problem prior to the installation of power generating facilities on the Canadian Columbia river. Only after the generating equipment is added at Mica creek is there the possibility of a conflict between Canadian and United States interests in the operation of these storages.

Now, I go on to explain there are already 13 million acre feet of storage developed in the Columbia river basin. It is listed there. This is the basic storage that is entirely in the United States, with the exception of Kootenay lake. Most of these reservoirs—and they are in the United States—are combined with power projects. It will be advantageous to the United States to postpone drawing them down as long as possible and thus maintain high heads on the at-site power installations. Moreover, at least one of the United States reservoirs is so large in relation to its drainage area that, once emptied, it may take several years to refill it. These considerations would cause American authorities to call for use of Canadian storage ahead of their own.

That is perfectly natural and to be expected.

Hence, for maximum power benefits in the United States, the general rule would be to exhaust all three Treaty storages in Canada at the beginning of the low water season and leave them empty while proceeding to draw down the United States storages.

In other words, it is natural they should want to hold up Grand Coulee until the end and use our storage. Hence, for maximum power benefits in the United States, the general rule would be to exhaust all three treaty storages in Canada at the beginning of the low water season and leave them empty while proceeding to draw down the United States storages.

On the other hand, after generating equipment is installed at Mica creek Canada will wish to extend the depletion of the Mica creek reservoir over the entire low water season in order to maintain continuity of output from this large power plant. Such extension of the drawdown of the Mica creek reservoir will become all the more important after the Downie creek and Revelstoke canyon plants are added downstream.

The treaty recognizes this situation by providing in paragraph 7 of Annex A that after the development of power on the Canadian Columbia the operation

of the treaty storages may be changed for maximum total production from the Canadian and American systems operating independently. I will not read the quotation at the bottom of that sheet. I will go over to the seventh line on page 25. It would appear that paragraph 7(i) of the protocol further provides that these limiting volumes of effective change in Canadian storage would be considered as reductions below the actual volume required to produce maximum benefits in the United States. If Canada can stay within these limitations in adjusting treaty storage operation for maximum benefit in both countries, any loss of benefits in the United States would be shared by the two countries. Further loss in the United States beyond this limitation, however, would be for Canada's account alone.

This is a complex situation to analyse, particularly if the attempt is made to forecast the conflict which might develop for every year of the life of the treaty. Fortunately, it is possible to study a few critical years and thereby determine the seriousness of the situation for Canada.

On examining the program of Canadian development illustrated in Appendix III—that is where we showed a program for development beginning with Waneta and ending at seven mile—it would appear that maximum conflict of interest may occur between 1983-1984, when installation of at site power at Mica creek is expected to be completed, and 1990-91, when all Canadian power developments downstream of Mica creek would be installed. It is probable that the conflict would be most severe at the beginning of the period. Hence, the load conditions expected in 1983-1984 have been analysed in the following steps for typical streamflow conditions on the Columbia, assumed to be represented by the actual flows of 1951-1952.

The year 1951-1952 on the Columbia is a pretty average year. First of all, the load demand for the interconnected British Columbia system for the year in question was estimated on the basis of 6.1 per cent annual load growth and allocated to the months of the year in accordance with the prevailing load pattern.

The pattern of discharge from Arrow lakes that the United States might request for optimum benefits in that country was derived from the studies of the international work group as extended by the Bonneville power administration and the United States Army Corps of Engineers.

In other words, we then took the United States extensions of the international work group studies to find out what flows they would expect to pass over the international boundary in the years in question.

A series of trial computations of discharges from both Mica creek and Arrow lakes was then made to arrive as nearly as possible at the discharges from the latter required by the United States.

I think I can abbreviate this for you, gentlemen. Then, we brought the Peace reservoir into the picture and made such practical use as we could of the Peace reservoir to make the discharges from Mica come more nearly into accord with those required by the United States.

Lastly, we brought into play the storage in Arrow lakes for completing the regulation or the provision of the discharges at the international boundary that the United States would require. I should also mention that we used, in meeting the Canadian load demand, the seven million acre feet of residual storage which is available at Mica creek. You will remember there are 12 million acre feet of storage in Mica. There are five million acre feet available above the seven million acre feet in the treaty.

Any deficits in the required Arrow lakes discharges, remaining after the above steps, were then assumed to be corrected by requesting the United States to make appropriate changes in the operation of the Libby reservoir. Losses

in the United States were thus confined to those resulting from the use of the natural flow at Libby through a lower head than would otherwise have prevailed.

If I could summarize, again, briefly, we found out how they can delay that water discharged across the boundary. We forecast the load to see how we should be discharging the water out of Mica; then we used Mica in combination with the Peace to modify Mica discharges, and to a certain extent to come a little closer to what the United States would require. Finally, we used the residual storage at Arrow lakes to complete what they would require.

The results will be shown on an appendix. Both the years 1983-1984 and 1990-1991 were then similarly analysed. First of all, we took the typical year and then two critical years. This illustrates the operation of Mica and Arrow in the typical year. This is what one would normally expect. The dotted line is the way the computer operations of the United States showed they would expect Mica to be operated, and here is how they would expect Arrow to be operated. The full line shows how we were able to use Arrow lakes so to adjust the discharges from Mica to eliminate completely any conflict with the United States.

Shown in a block diagram is the actual discharge passing over the border, and it is in strict conformity with what the United States is likely to request, as indicated by their computations.

On a later chart we will see during the critical years we always did not arrive at an ideal answer; we did have some deficits and some surpluses. But, in a typical year there is no problem in discharging the water as the United States authorities want it if we use the Arrow lakes reservoir to regulate Mica creek discharges.

Mr. PUGH: That is actual delivery across the border with Mica and High Arrow control?

Mr. SEXTON: Yes. The operation of Mica and the Arrow lakes reservoir for the typical year is shown on the chart. We go now to the two typical years, 1983-84 and 1990-91, which are shown. In respect of 1983-84, we have used the critical years 1943 through 1946, which were the most serious years in Canada, when the lowest stream flows occurred on the Columbia, and the British Columbia Hydro and Power Authority would be having its greatest difficulty in meeting load requirements. However, this occurs only about once in 15 years. Here again, the dotted line shows how the Americans might have expected us to operate Mica and the dotted line below shows how they might have expected us to operate Arrow lakes.

You will recall I said that the United States authority would normally want us to pull Mica and Arrow lakes down at the beginning. You will notice they pull Mica down sharply at the beginning of the season, whereas the Canadians wish to distribute the use of Mica over the entire period, December, January, February, March and so on. So, we distribute the use of Mica over the entire winter and, in doing so, we are taking up the difference here in Arrow lakes. And, down below we still are able to meet the United States requirements. You can go right across and show how we depart in a perfectly normal manner from what the United States might have expected in the operation of Mica and we have balanced the situation in Arrow lakes where possible.

Here is an interesting point. Here the Americans have drawn the treaty storage of 7 million acre feet out of Mica; this is a serious year for Canada, so we draw down Canada's reserve storage in Mica and, at the same time, pile it up in Arrow lakes in order to minimize the wastage. Here again, we had to use that reserve storage in the year 1946, and again we had to put it up in Arrow. The net result of that operation here was we had a deficit to meet American requirements in November of 1944 and excesses in December, January

and July following. To meet these deficits we assumed that Libby would be brought into the picture. In asking that the United States use their water from Libby, although this will be a modest amount of water, the result in doing so will be to lower the pond level at Libby and, hence, acquire less energy from the natural flow of the river through that plant. The loss of power you incur through that change in operation at Libby is trifling. I think we say it is less than $\frac{1}{4}$ of one per cent in actual figures and, in quantity, it is of the order of between 1 and 2 megawatts.

Mr. PUGH: Is that loss of power at Libby—

Mr. SEXTON: At Libby.

Mr. PUGH: —or in the Canadian chain.

Mr. SEXTON: No, at Libby; we have maintained our situation in Canada. Also, by using Libby we have maintained what the United States authority wants on their main stem. But, in that operation we have incurred a penalty at Libby. Perhaps I should not call it a penalty; I should say we have caused a loss at Libby which we estimate at between 1 and 2 megawatts, which is really beyond the degree of accuracy you can expect out of this type of computation.

We also have a 1990-91 chart. Here is a similar situation. This is after we have completed all the Canadian installations. This is the second time we feel it might be critical; here we are assuming a repetition of these low water years, 1943, 1944, 1945 and 1946, and the dotted line shows how the United States might ask for Mica, and this line how we use it. Here again we call upon Mica bottom storage and pile it up in Arrow. There was a little more than we could completely put in Arrow and we had an excess to turn down the Columbia. We could not avoid it, and this is a waste. There again the loss of water was of the order of $\frac{1}{4}$ of 1 per cent.

It is beyond the practical scope of these manual computations to determine what losses and penalties would be incurred if the Arrow lakes reservoir were not available. I should modify that statement slightly; Mr. Wilschut has been working vigorously to get out a first estimate of what that loss might be in order that we may apply it to the alternative program. It is clearly demonstrated, however, that this reservoir will make it possible to operate the Mica creek storage to meet Canadian load requirements, and at the same time maintain discharges from Arrow lakes for optimum operation within the United States, and that the capacity proposed to be impounded is necessary.

I come now to the final part of my story, which is the diversion of Columbia river water to the prairie provinces.

Article XIII of the treaty makes provision for diversion of water from the Columbia or Kootenay rivers for consumptive use. Article I defines consumptive use as including use of water for domestic, municipal, stock water, irrigation, mining and industry. Hence, should the need ever arise, it would be legally possible to divert water from the Columbia river over the Rocky mountain continental divide to the south Saskatchewan river and thence to Hudson bay.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Sexton, you mention in the brief that it is legally possible to divert water from the Columbia. The interpretation of the words "consumptive use" has been questioned during the hearings and I am wondering if you have a legal opinion on this?

Mr. SEXTON: No, I have only our own interpretation of the treaty.

Mr. GELBER: Mr. Chairman, is that not a superfluous question to be put at this time. This is an engineering report and I think we should assume we are merely obtaining figures.

The VICE CHAIRMAN: Mr. Cameron asked if they had an opinion and Mr. Sexton said they did not have one. That answers the question and, so far as I am concerned, that is the end of it until a later time.

Mr. SEXTON: The need for such diversion in the foreseeable future, however, is improbable and should not be allowed to impede the development of power on the Canadian Columbia river.

Take, for example, the domestic and municipal uses of water. The average annual flow of the combined North and South Saskatchewan rivers at the The Pas is approximately 25,000 cubic feet per second. If this water were assumed to be used only once, it would be sufficient to provide a normal 150 gallons per capita per day for a population of 90 million people. In densely populated regions, however, water may be used through a series of population centres as it progresses downstream. Moreover, there are also the Athabaska and Peace rivers which drain naturally to the Arctic, and which would be diverted to the prairies. We have combined appendices XV and XVI on the one sheet.

If only 50 per cent of the average annual flow of the Peace river at Peace River and of the Athabaska river at Athabaska were thus diverted, it would add 36,000 cfs. to the Saskatchewan and supply single use for 130 million people. In other words, there is enough water already available on the eastern slope of the Rocky mountains to supply a population measured in the hundreds of millions, and I have not mentioned the Red river or the Churchill river. There is no evidence from the evolution of population densities in the world to date to indicate any such growth of population in the foreseeable future in the continental steppe climate of the prairie provinces with its average annual temperature of 35°F. I am speaking of my home province in this case and I remember it very well.

Mr. BYRNE: There is lots of water but very little swimming.

Mr. SEXTON: In the case of irrigation, there is a similar lack of evidence to support a forecast requiring diversion from the Columbia river. It is now more than 80 years since the first irrigation project of significant size was started on the prairies at Lethbridge, and, with the exception of a few small, specialized areas, the west is still a dry farming land producing yearly crops of grain on large acreages in a growing season of 90 days between frosts. The economy of the region is still based on wheat, and, as stated on page 13 of the recommendations and general considerations of the royal commission investigating the South Saskatchewan river in 1952, "Wheat itself is not an ideal crop for irrigation as early attempts in Alberta have very definitely shown. Lands quickly become weedy. Soil fertility is depleted for want of crop rotation. The growing of wheat under irrigation cannot compete with dry farming in areas having reasonably adequate rainfall."

It is to be expected that there will be some expansion of irrigation in the Palliser Triangle with future development and population. The extent, however, is uncertain.

An alternative approach to the problem would be to consider total consumptive uses, inclusive of irrigation, and at least one authority has made a forecast in this respect. Prof. E. Kuiper of the University of Manitoba suggests in his paper presented to the resources for tomorrow conference in 1961 that the potential population of Alberta, Saskatchewan and Manitoba may be 100,000,000 and that the total consumptive water requirements may be 50,000 cfs. Such ultimate requirements could be met without difficulty from the Red, Saskatchewan and Churchill rivers plus partial diversion from the Athabaska, and possibly the Peace rivers.

However, the preceding examination of future water requirements for the prairies is probably academic, since it would appear that the primary

concern underlying the arguments put forth in favour of diversion of the Columbia River to the Saskatchewan is not consumptive use of water but the development of hydro-electric power. A significant brief from the Prairie provinces states with reference to the Saskatchewan river system, "Increasing consumptive uses will reduce the hydro-electric potential of the river", and then proceeds to examine various schemes for augmenting the Saskatchewan river flow by diversion. The favoured scheme is the proposed diversion from the Columbia system since "It appears to be the only direct means to augment the flow in the south branch of the river", (referring to the Saskatchewan).

The reason for this preference is then explained. "By 1966 the Saskatchewan and federal governments will have spent about \$100 million to regulate the flow of the south Saskatchewan river which averages 6,000 to 8,000 cubic feet per second. The diversion of an equal or greater amount from other watersheds would at least double the energy available at all power sites on the Saskatchewan down to Grand Rapids and would substantially increase the energy available from the Nelson river." The situation is further clarified in the submission as follows. "The average annual flow of the south Saskatchewan, for example, is some eight thousand cubic feet per second which is only one-tenth of what constitutes a good river for power production, such as the Columbia river at the United States-Canadian border...".

The misconception involved in the proposal to divert water from the Columbia river to the Saskatchewan for the generation of power is readily seen from an examination of Appendix XVI, which shows a profile across Western Canada from the Pacific Ocean to Hudson Bay by way of Kicking Horse Pass, the Bow river and the south Saskatchewan Valley. Regardless of whether one considers diversion of the Columbia from a reservoir at Mica creek or at Bull river-Luxor, the water would have to be raised some 2500 feet and the significant point of this profile is that in the Rocky mountain trench, where both the Kootenay and Columbia flow, the elevation is between 2,500 and 2,600 feet above sea level. There is a very sharp rise up the Rocky mountain continental divide and then a relatively gradual fall across the prairies to Hudson bay. Before you can get water into this system you must pump it up here.

One report which has been published, based admittedly on a very preliminary examination of maps to the scale of one mile to eight inches, states possibly you could get water out here at Banff which is about 4,500 feet elevation by pumping 2,000 feet in a tunnel 40 or 50 miles long. In my opinion if one is making any estimates here at the moment it would be subject to the consideration that you should be prepared to pump 2,500 feet in order to get water onto the prairies where you then have this gradual slope of the river. Strictly speaking from a power point of view, if this were a heavy rain-fall country one could readily understand the proposal to divert the head waters of the Saskatchewan into the Columbia, but the reverse is most difficult to understand because if it is 2,500 feet or 2,000 feet which you have to put it through, for every 100 feet you pump you must put it through almost, if not more than, 150 feet of head on this side merely to recover what you have put into it over here. By simple arithmetic, if you take 80 to 85 per cent efficiency of your total operation to get your water up here and 80 per cent to 85 per cent efficiency of your recovery here, then check the reciprocal of that you will realize that you must have about 50 per cent more head on this side merely to get back what you are putting into it. In other words, you would have a colossal expenditure, something of the order of the cost of the entire Columbia system itself. It would be something you would measure in terms of a billion dollars and you would get exactly nothing from it.

Mr. BYRNE: This is like pulling yourself up by your boot straps.

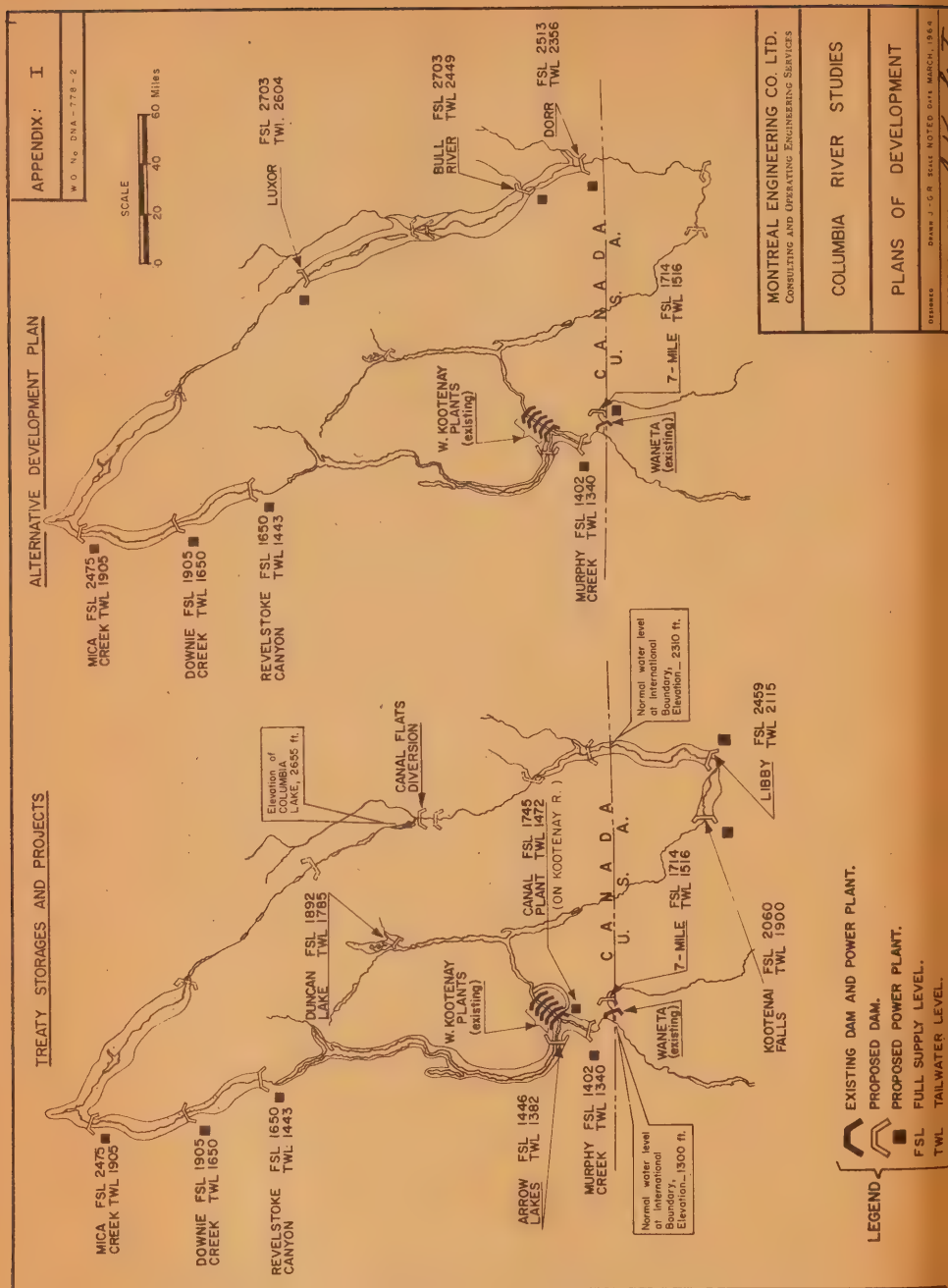
Mr. SEXTON: It is like pulling yourself up by your boot straps, and this does not take into account the fact that you have taken it out of one area and put it into another. This is truly an amazing proposal.

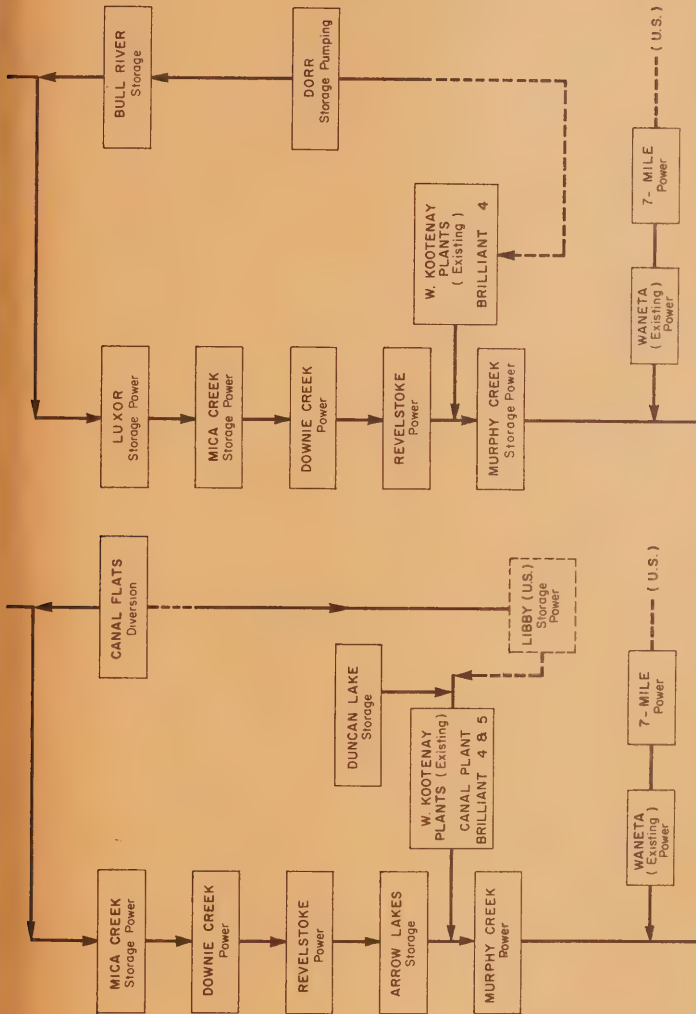
I think I should just conclude with my last sentence here, gentlemen. Hence the proposal to pump Columbia river water up the west side of the Rocky mountains to generate power on the east side could be likened to depositing one dollar in the bank in British Columbia in order to draw out 50 cents on the prairies after paying a two dollar service charge.

Mr. MACDONALD: I wish to raise a point of order. I have a number of questions which I would like to address to Mr. Sexton, but unfortunately we have witnesses coming from some distant points tomorrow and Friday. I wonder if we could leave it on this basis, that at some time mutually convenient Mr. Sexton could reappear and deal with those questions.

The CHAIRMAN: It is my understanding that we will meet tomorrow at 10 o'clock. The first witness then will be General McNaughton. Mr. Sexton and his group will be here for questioning as soon as General McNaughton is finished. As it may work out, there may be an extensive number of questions put to General McNaughton, and if so we might consult with Mr. Sexton and his group at that time to facilitate matters for both members of the committee and Mr. Sexton.

APPENDIX M-1



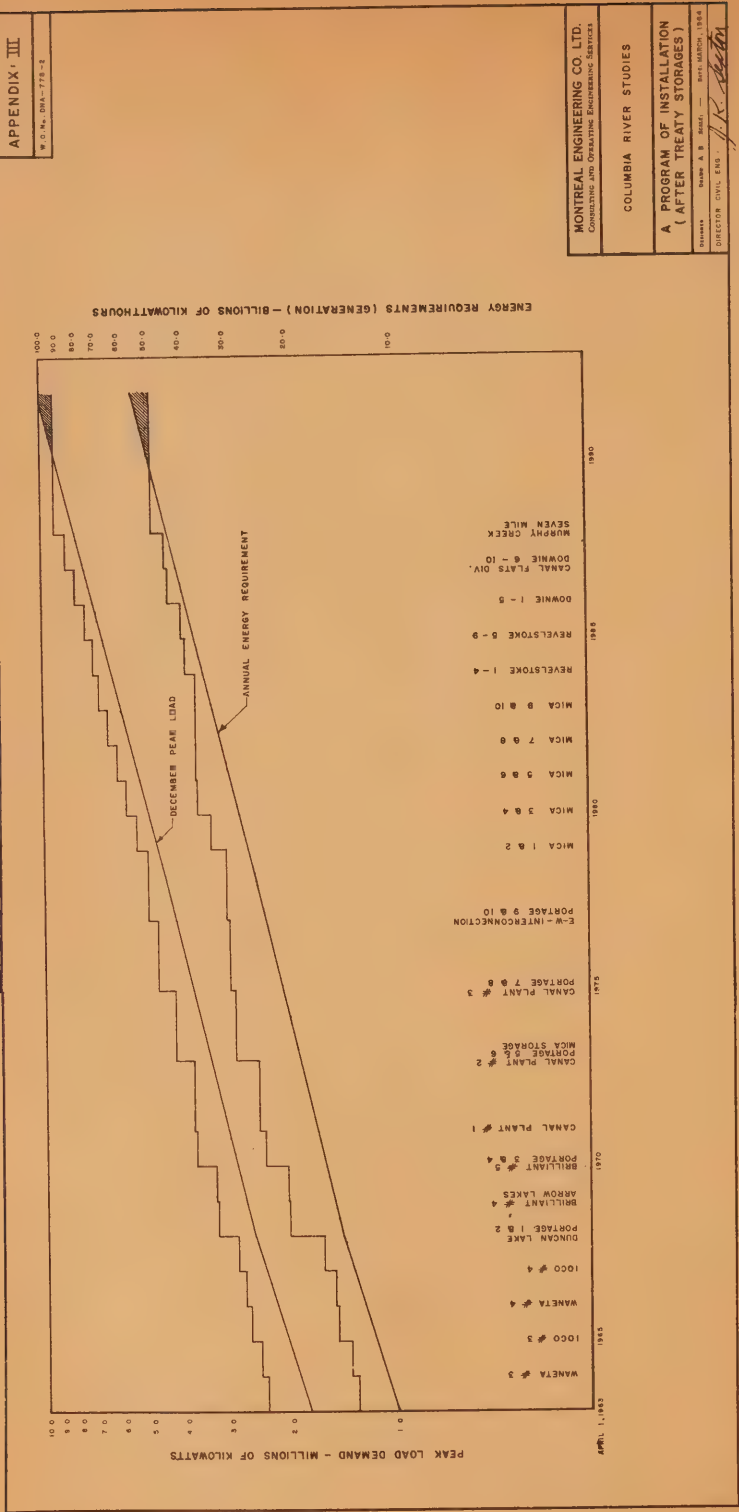


TREATY STORAGES AND PROJECTS

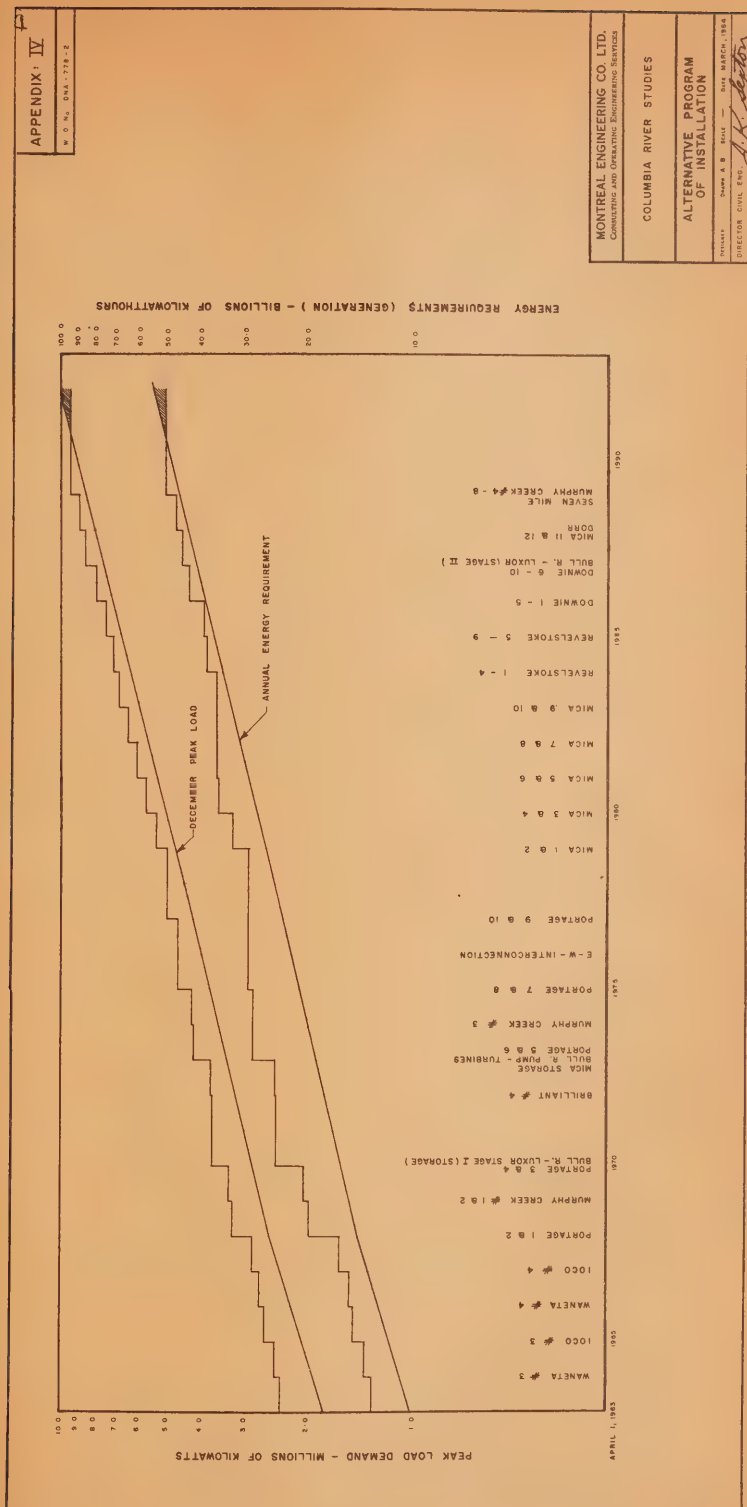
ALTERNATIVE DEVELOPMENT PLAN

| |
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| MONTREAL ENGINEERING CO. LTD. CONSULTING AND OPERATING ENGINEERING SERVICES |
| COLUMBIA RIVER STUDIES |
| DIAGRAMS OF DEVELOPMENTS |
| DESIGNED AND DRAWN J.H. SCALE — DATE March 16, '64 CHECKED C.O. ING A.K. Seltzer |

APPENDIX M-3



APPENDIX M-4



APPENDIX M-5

APPENDIX V

COLUMBIA RIVER STUDIES
Government Bond Yields*
Long Maturities

| YEAR | CANADA | | UNITED STATES | |
|------|-------------------|------------------|-------------------|------------------|
| | Average for month | Average for year | Average for month | Average for year |
| 1960 | | 5.15 | | 4.02 |
| 1961 | | 5.03 | | 3.90 |
| 1962 | Jan. | 4.97 | 4.08 | |
| | Feb. | 4.97 | 4.09 | |
| | Mar. | 4.91 | 4.02 | |
| | Apr. | 4.82 | 3.90 | |
| | May | 4.89 | 3.88 | |
| | June | 5.08 | 3.89 | |
| | July | 5.42 | 4.02 | |
| | Aug. | 5.41 | 3.97 | |
| | Sep. | 5.38 | 3.94 | |
| | Oct. | 5.19 | 3.89 | |
| | Nov. | 5.04 | 3.87 | |
| | Dec. | 5.08 | 3.87 | 3.95 |
| 1963 | Jan. | 5.07 | 3.88 | |
| | Feb. | 5.09 | 3.91 | |
| | Mar. | 5.10 | 3.93 | |
| | Apr. | 4.99 | 3.97 | |
| | May | 4.92 | 3.97 | |
| | June | 4.94 | 4.00 | |
| | July | 5.07 | 4.02 | |
| | Aug. | 5.21 | 3.99 | |
| | Sep. | 5.20 | 4.04 | |
| | Oct. | 5.06 | 4.06 | |
| | Nov. | 5.12 | 4.10 | |
| | Dec. | 5.14 | 4.14 | 4.00 |
| 1964 | Jan. | 5.18 | 4.15 | |

*Sources: Wood Gundy & Co. Ltd.

International Financial Statistics, International Monetary Fund.

MONTREAL ENGINEERING CO. LTD.
CONSULTING AND OPERATING ENGINEERING SERVICES

COLUMBIA RIVER STUDIES

TREATY PLAN

AVERAGE COST OF PO

DESIGNED BY: *John* DRAWN BY: SCALE DATE MARCH 1964

RECTOR () ENG

| | |
|-------------|-------------|
| SUB - TOTAL | 501,000,000 |
|-------------|-------------|

DOWNSTREAM

VALUE OF CANADIAN SHARE OF DOWNSTREAM

POWER BENEFITS AFTER SALE PERIOD

TOTAL

OVERALL AVERAGE COST OF POWER

= 1.90 MILLS / KWH.

$$0.001 \times 1,000,000,000 = 0.001,000,000$$

0'37C = 000,078,991

$$= \frac{1,000,000,000}{1,000,000,000}$$

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APPENDIX M-8

APPENDIX VIII

DERIVATION OF FLOOD CONTROL PAYMENTS
FOR THE ALTERNATIVE PLAN*Columbia River Storage*

Storage available: Murphy Creek, 2,834,000 acre-feet; Mica Creek, 12,000,000 acre-feet.

It has been assumed that these two reservoirs can provide the same degree of flood control as Arrow Lakes and the 80,000 acre-feet of Mica storage committed to operation for flood control under Article IV (2) of the Treaty.

The calculated compensation is slightly less than the payments for Arrow Lakes and Mica Creek stated in Article VI (2) of the Treaty. The reason is that in the Treaty plan most of the compensation becomes payable at the completion of Arrow Lakes (1969). In the alternative plan the full amount becomes payable after completion of the Mica Creek dam (1973), i.e. four years later.

The calculation is summarized below:—

Annual value of damages prevented under the Treaty Plan:—

| | |
|--|--------------------------|
| Arrow Lakes | \$ 4,610,000* |
| Mica Creek | 110,000* |
| TOTAL | \$ 4,720,000 |
| Annual Canadian entitlement | \$ 2,360,000 |
| Corresponding lump sum payment (annual payments discounted at 3½% over 51 years) | <u>U.S. \$52,200,000</u> |

*The Columbia River Treaty, Protocol and Related Documents, February, 1964, page 145

*Kootenay River Storage*1. *Primary Flood Control*

| | |
|--------------------------------------|---|
| Storage available in Bull River: | 2,794,000 acre-feet |
| Storage available for flood control: | 1,900,000 acre-feet |
| Effectiveness factor: | 70% (ICREB Report, Appendix VI, Table 15) |

Unit value of effective storage for primary flood control: U.S. \$1.38/acre-foot*

Total primary benefit $1,900,000 \times .70 \times \$1.38 = \$1,835,000$

2. *Local Flood Control*

Prorated to benefit credited to Libby.

Libby benefit \$815,000; Storage 5,010,000 acre-feet**

Bull River benefit $1,900,000 \times \$815,000 = \$309,000$

5,010,000

3. *Total Benefit*

| | |
|---|---------------------|
| Primary flood control | \$ 1,835,000 |
| Local flood control | <u>309,000</u> |
| TOTAL | \$ 2,144,000 |
| Annual Canadian entitlement (50%) | \$ 1,072,000 |
| Corresponding lump sum payment (annual payments discounted at 3½% over 54 years) U.S. | <u>\$24,100,000</u> |

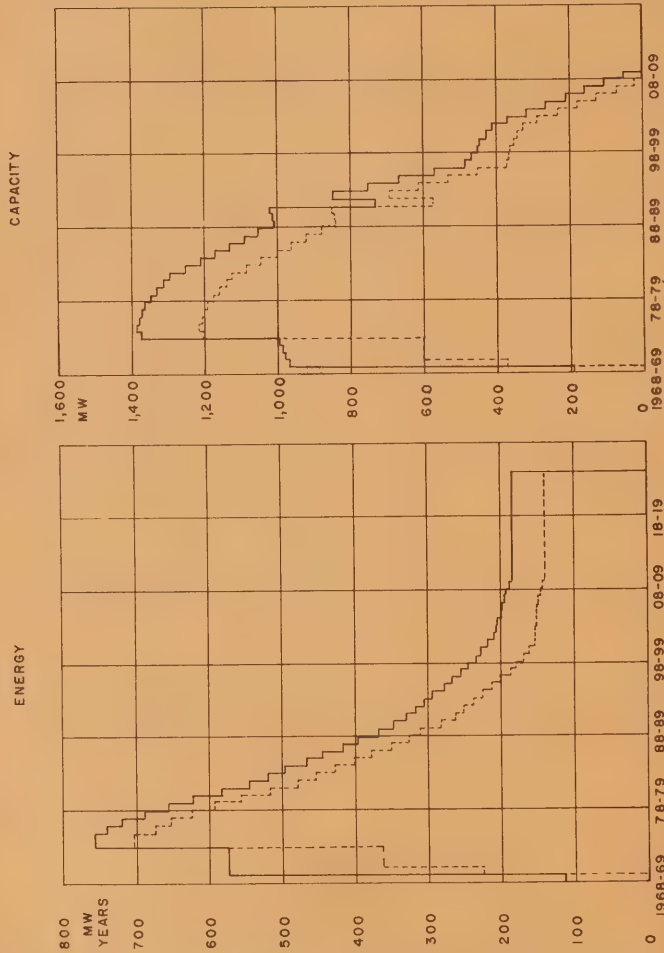
* The Columbia River Treaty, Protocol and Related Documents, February 1964, page 145.

**House Document No. 403, 87th Congress "Columbia River and Tributaries". Volume I, Page 132.

APPENDIX M.9

APPENDIX IX Fig. 1

W O No. CNA-778-2



MONTREAL ENGINEERING CO. LTD.
CONSULTING AND OPERATING ENGINEERING SERVICES

COLUMBIA RIVER STUDIES

DOWNSTREAM BENEFIT
ENTITLEMENTS

DESIGNED BY: SHARP, A. L. DATE: MARCH 1984

TREATY
ALTERNATIVE PLAN (ESTIMATE)

APPENDIX IX

DERIVATION OF THE PAYMENT FOR DOWNSTREAM POWER BENEFITS
IN THE ALTERNATIVE PLAN

1. The financial calculation was based on the following sources:—

- (a) Agreed Canadian entitlements under the Treaty for the years 1968-69 to 2002-03 inclusive.
- (b) Estimated Canadian entitlements under the Treaty from 2003-04 until expiration of the Treaty in 2024.
- (c) Unit prices based on the lump sum payment stated in Article 3(a) of the Attachment to the Protocol.

2. Figure 1 at the end of this Appendix shows the agreed and estimated benefits under the Treaty and the estimated entitlements under the alternative plan. As can be seen from the diagrams, there are three significant elements in the estimate of the alternative entitlements:—

(a) *The benefits immediately after completion of the storages*

The initial values under the Treaty Plan were determined for Duncan Lake (1,400,000 acre-feet), Duncan+Arrow Lakes (8,500,000 acre-feet) and Duncan+Arrow+Mica (15,500,000 acre-feet). From these data a fairly accurate estimate can be derived for Murphy Creek (2,800,000 acre-feet), Murphy Creek+Bull River (4,700,000 acre-feet) and Murphy Creek+ Bull River+Mica (11,700,000 acre-feet).

(b) *The rate of decline of the benefits*

An approximately parallel decline was adopted for the alternative plan

(c) *The residual benefits in the latter part of the 60-year period*

The capacity credit becomes zero when the maximum feasible capacity is installed in the U.S. base system. The energy component reduces to the value of spill prevented at the main stem plants in the U.S. The decrease of the energy entitlement in the alternative plan was based on an estimate of the additional spill which would occur during the 30-year streamflow period if the Canadian storage were reduced to 11,700,000 acre-feet.

3. The lump sum payments in the financial analysis are based on annual downstream benefit entitlements as determined above. A theoretical 30-sales period was assumed to arrive at a figure comparable to the \$254,400,000 payment on 1st October, 1964. The value of the estimated entitlements in the remaining period is the residual benefit of the alternative plan. The resulting lump sum payments (1973 dollars, Canadian funds) are shown below, together with the equivalent amounts computed for the Treaty Plan.

| | Alternative Plan | Treaty Plan |
|---------------------------------------|----------------------|----------------------|
| Storage (millions of acre-feet) | 11.7 | 15.5 |
| Benefit of 30-year Sales period | \$327,730,000 | \$416,150,000 |
| Residual benefit | <u>14,420,000</u> | <u>21,000,000</u> |
| Total benefit | <u>\$342,150,000</u> | <u>\$437,150,000</u> |

APPENDIX M-10

ESTIMATED ANNUAL COST OF POWER - ALTERNATIVE PLAN OF DEVELOPMENT

(All Costs In Thousands Of Dollars)

APPENDIX X

| YEAR | CAPITAL COSTS ALLOCATED TO CANADA | | | | | | | | | | | | | TOTAL FIXED ANNUAL CHARGES (15) | TOTAL OP & MAINT. CHARGES (16) | TOTAL ANNUAL CHARGES (17) | TOTAL FIRM ENERGY COST MILLS PER KWH x 10 ³ (18) | ENERGY MILLS PER KWH (19) |
|--------------------|-----------------------------------|---------------|---------------|-----------------|--------------------|-----------------|---------------|--------------------|-----------------|----------------|---------------|--------------------|-------|---|--|------------------------------------|---|------------------------------------|
| | STORAGES | | | POWER PLANTS | | | | | | | | | | | | | | |
| | MURPHY CHECK | BULL RIVER | MICA CHECK | MURPHY CHECK | BRILLIANT NO. 4 | BULL RIVER I | MICA CHECK | REYNOLDS CANYON | DOVATE CHECK | BULL R DOOR | SEVEN MILE | GENERAL STUDIES | | | | | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (14) | (15) | (16) | (17) | (18) | (19) | |
| % OF TOTAL COST | 4.63% | 48.2% | 47.7% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 37.0% | 937 | 554 | 1,491 | 0.60 | |
| 1959-70 | 3,395 (a) | | | 13,776 | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1970-71 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1971-72 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1972-73 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1973-74 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1974-75 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1975-76 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1976-77 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1977-78 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1978-79 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1979-80 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1980-81 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1981-82 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1982-83 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1983-84 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1984-85 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1985-86 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1986-87 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1987-88 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1988-89 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 1989-90 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| to | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2017-18 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2018-19 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2019-20 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2020-21 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2021-22 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2022-23 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2023-24 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2024-25 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2025-26 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2026-27 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2027-28 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2028-29 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2029-30 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2030-31 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2031-32 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2032-33 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2033-34 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2034-35 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2035-36 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2036-37 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2037-38 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |
| 2038-39 | | | | | | | | | | | | | | 1,865 | 793 | 2,658 | 1.33 | 2.49 |

(a). Continuation of capital cost (net after deduction of fixed control payment) on the basis of ultimate developed head in Canada.

ESTIMATE OF AVERAGE COST OF POWER TO CANADA RESULTING FROM THE ALTERNATIVE PLAN OF DEVELOPMENT

APPENDIX : XI

M O No 91A-778-2

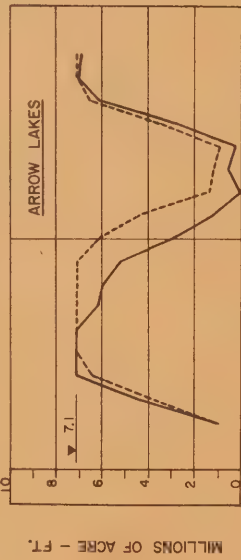
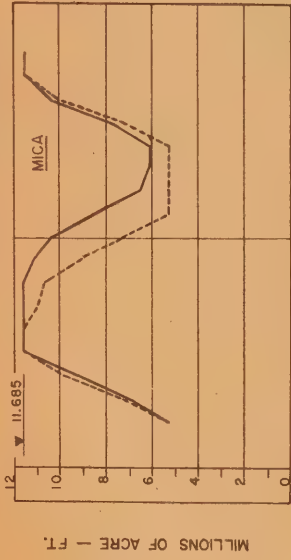
| ITEM | AMOUNT IN CANADIAN FUNDS \$ | YEAR | ADJUSTED TO 1973 VALUE USING 5% INTEREST RATE | | LIFETIME FIRM ENERGY OUTPUT KWH/10 ⁹ |
|--|-----------------------------------|-----------|--|-------------|--|
| | | | RECEIPTS \$ | COSTS \$ | |
| U.S. PAYMENT FOR DOWNSTREAM POWER BENEFITS | 216,408,000 | 1964 | 327,730,000 | | |
| MURPHY CREEK STORAGE | 73,332,000 | 1969 | | 89,140,000 | |
| BULL RIVER STORAGE | 93,100,000 | 1970 | | 107,780,000 | |
| U.S. PAYMENT FOR FLOOD CONTROL | 25,998,000 | 1970 | 30,100,000 | | |
| MICA CREEK STORAGE | 245,200,000 | 1973 | | 245,200,000 | |
| U.S. PAYMENT FOR FLOOD CONTROL | 56,311,000 | | 56,310,000 | | |
| GENERAL STUDIES AND DEVELOPMENT COSTS | 2,630,000 | 1973 | | 2,630,000 | |
| OPERATING EXPENSES, MURPHY CR., BULL R. | | | | | |
| AND MICA CREEK STORAGES | | 1969-2024 | | 51,730,000 | |
| ADMINISTRATION EXPENSES | | 1973-2024 | | 3,120,000 | |
| EXISTING WEST KOOTENAY PLANTS | | | | | 9.77 |
| MURPHY CREEK PLANT | | 1969-89 | | 15,670,000 | 23.46 |
| BRIGHT UNIT 4 | | 1972 | | 1,520,000 | 1.35 |
| BULL RIVER PLANT - STAGE 1 | | 1973 | | 2,730,000 | 3.65 |
| MICA CREEK PLANT | | 1979-88 | | 97,340,000 | 91.00 |
| REVELSTOKE CANYON PLANT | | 1984-85 | | 81,230,000 | 34.78 |
| DOWNIE CREEK PLANT | | 1986-87 | | 78,110,000 | 38.40 |
| BULL RIVER DIVERSION - LUXOR PLANT | | 1987 | | 32,930,000 | 31.75 |
| DORR STORAGE AND DIVERSION | | 1988 | | 22,460,000 | 13.23 |
| SEVEN MILE PLANT | | 1989 | | 7,980,000 | 19.71 |
| SUB TOTAL | | | 414,140,000 | | |
| VALUE OF CANADIAN SHARE OF DOWNSTREAM | | | | | |
| POWER BENEFITS AFTER SALE PERIOD | | | 14,420,000 | | |
| TOTALS | | | 428,560,000 | 823,980,000 | 267.10 |
| OVERALL AVERAGE COST OF POWER | | | = (823,980,000 + 194,710,000 - 428,560,000) x 1000 = 2.21 MILLS / KWH. | | |
| | | | 267,100,000,000 | | |

MONTREAL ENGINEERING CO. LTD.
CONSULTING AND OPERATING ENGINEERING SERVICES

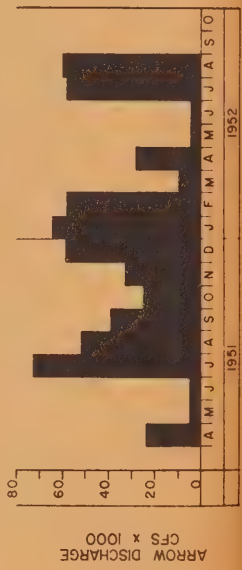
COLUMBIA RIVER STUDIES

ALTERNATIVE PLAN OF DEVELOPMENT
AVERAGE COST OF POWERDRAWN BY: DATE: 28 MARCH 1984
DIRECTOR CIVIL ENG. *J. R. Johnston*

TYPICAL YEAR STORAGE OPERATION
1983-84 CONDITIONS



DISCHARGE AT ARROW
LAKES AS INDICATED
BY U.S.A. REGULATION
STUDIES.



APPENDIX : XII

N O N_o 084-778-2

MONTREAL ENGINEERING CO. LTD.
CONSULTING AND OPERATING ENGINEERING STUDIES

COLUMBIA RIVER STUDIES

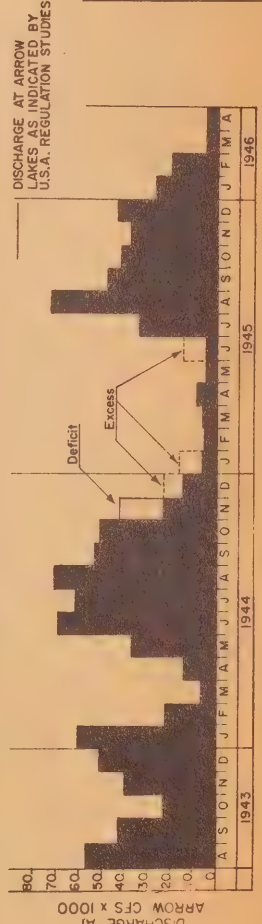
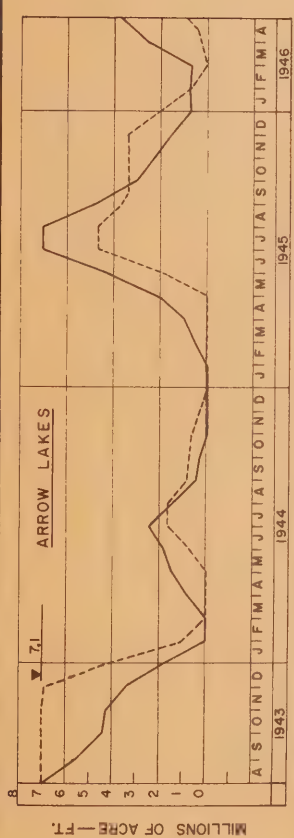
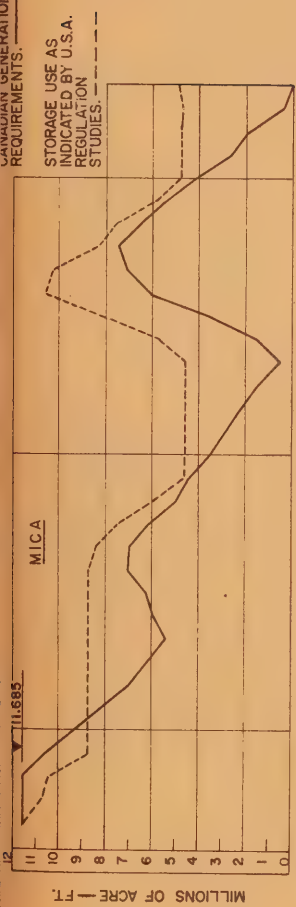
TYPICAL YEAR STORAGE OPERATION
1983-84 CONDITIONS

Project : R. B. 1951 MARCH - 1954

DIRECTOR CIVIL ENG. J. K. ...

W. T. LINDEN, CHIEF
0 9, DML-778-2

CANADIAN GENERATION
REQUIREMENTS.



MONTREAL ENGINEERING CO. LTD.
CONSULTING AND OPERATING ENGINEERING SERVICES

COLUMBIA RIVER STUDIES

CRITICAL PERIOD STORAGE
OPERATION 1983-84 CONDITIONS

STEWART K. B. DAWSON J.B. R. ELLIS — MAY MARCH, 1984
REG-108 CIVIL ENG

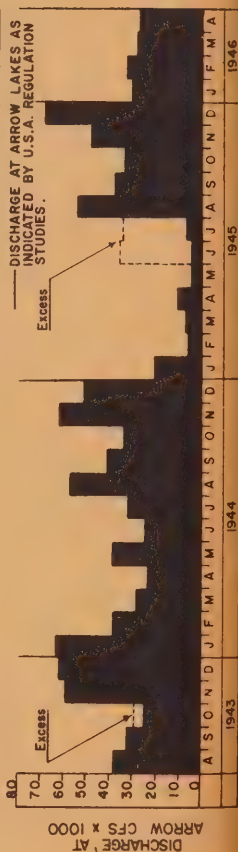
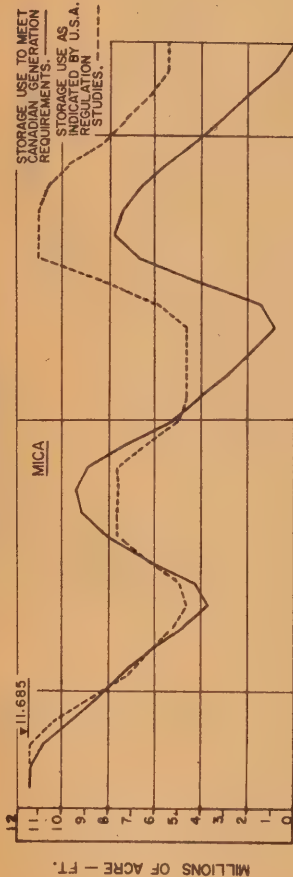
J.K. Stewart

APPENDIX M-14

CRITICAL PERIOD STORAGE OPERATION
1990-91 CONDITIONS

APPENDIX : XIV

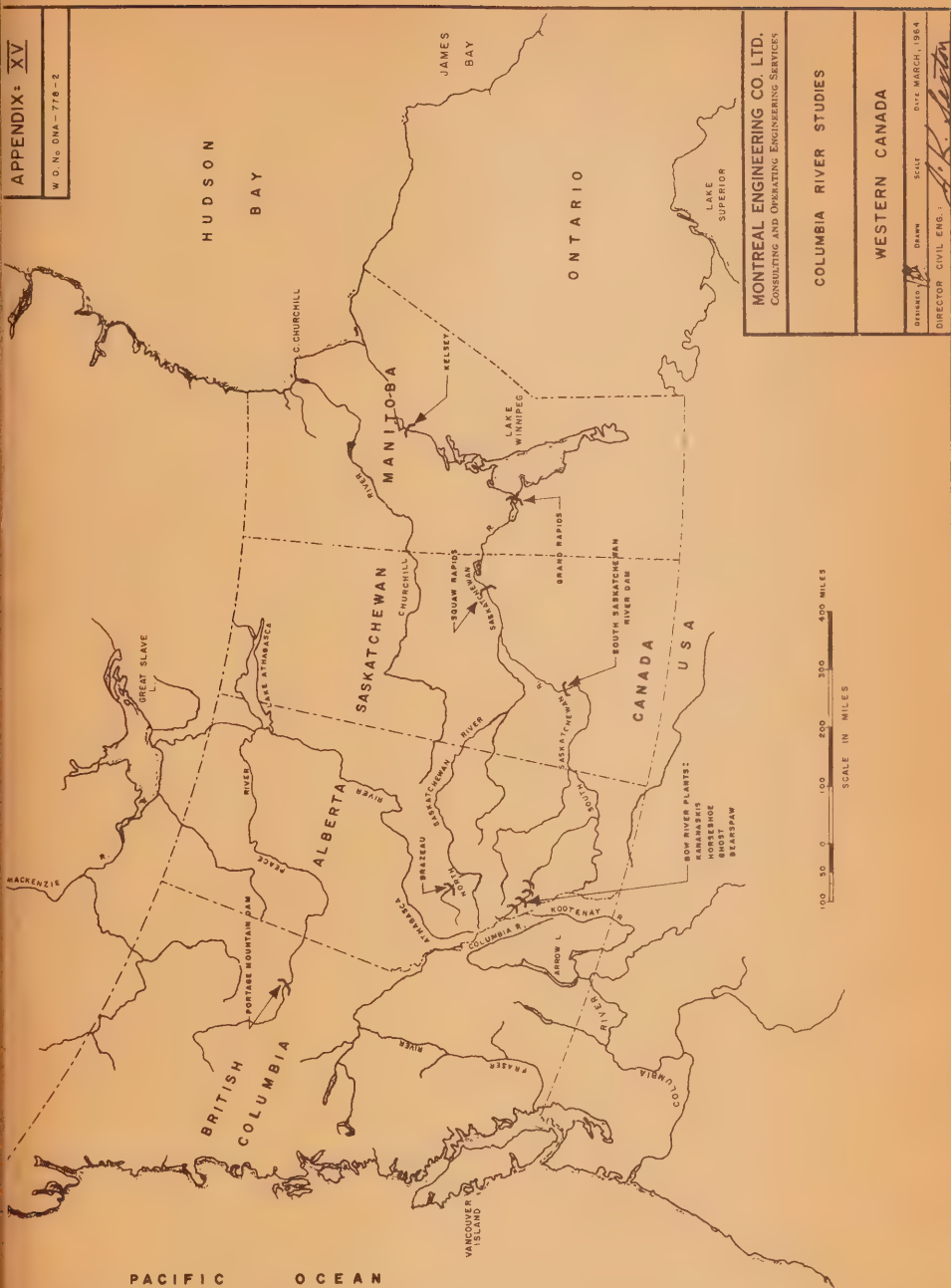
W O N G DBA-776-2



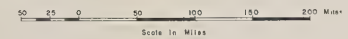
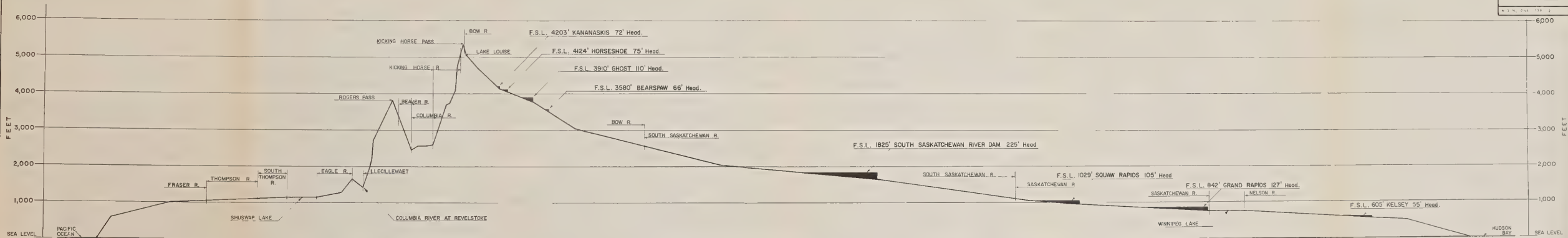
MONTREAL ENGINEERING CO. LTD.
CONSULTING AND OPERATING ENGINEERING SERVICES

COLUMBIA RIVER STUDIES

CRITICAL PERIOD STORAGE
OPERATION 1990-91 CONDITIONS







| | |
|---|------------|
| MONTREAL ENGINEERING CO. LTD. | |
| CONSULTING AND SURVEYING ENGINEERING SERVICES | |
| COLUMBIA RIVER STUDIES | |
| PROFILE | |
| PACIFIC OCEAN | HUDSON BAY |
| J. R. Johnston | |

12

HOUSE OF COMMONS

Second Session—Twenty-sixth Parliament

1964

STANDING COMMITTEE

ON

EXTERNAL AFFAIRS

Chairman: JOHN R. MATHESON, Esq.

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 12

THURSDAY, APRIL 23, 1964

COLUMBIA RIVER TREATY AND PROTOCOL

WITNESSES:

General the Honourable A. G. L. McNaughton; Mr. J. K. Sexton, Director of Civil Engineering, Montreal Engineering Company Ltd.; Mr. C. N. Simpson, President; and Mr. H. J. Saaltink, Executive Engineer, H. G. Acres and Company Ltd.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1964

STANDING COMMITTEE ON EXTERNAL AFFAIRS

Chairman: Mr. John R. Matheson

Vice-Chairman: Mr. W. B. Nesbitt

and Messrs.

| | | |
|--|---|----------------|
| Brewin, | Fleming (<i>Okanagan-Revelstoke</i>), | Macdonald, |
| Byrne, | Forest, | MacEwan, |
| Cadieux (<i>Terrebonne</i>), | Gelber, | Martineau, |
| Cameron (<i>Nanaimo-Cowichan-The Islands</i>), | Groos, | Nielsen, |
| Cashin, | Haidasz, | Patterson, |
| Casselman (Mrs.), | Herridge, | Pennell, |
| Chatterton, | Kindt, | Pugh, |
| Davis, | Klein, | Ryan, |
| Deachman, | Langlois, | Stewart, |
| Dinsdale, | Laprise, | Turner, |
| Fairweather, | Leboe, | Willoughby—35. |

(Quorum 10)

Dorothy F. Ballantine,
Clerk of the Committee

Correction (English copy only)

Proceedings No. 7—Wednesday, April 15, 1964.

In the Minutes of Proceedings and Evidence—

Mr. Leboe should be included in the list of members present at the morning sitting.

MINUTES OF PROCEEDINGS

THURSDAY, April 23, 1964.

(20)

The Standing Committee on External Affairs met at 10.15 a.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Brewin, Byrne, Cameron (Nanaimo-Cowichan-The Islands), Chatterton, Davis, Deachman, Dinsdale, Fleming (Okanagan-Revelstoke), Forest, Gelber, Groos, Haidasz, Herridge, Lindt, Leboe, Matheson, Nesbitt, Pugh, Ryan, Stewart, Willoughby—(22).

In attendance: General the Honourable A. G. L. McNaughton; Mr. James Ipley, Editor, Engineering and Contract Record Magazine.

The members resumed questioning General McNaughton.

During the questioning, the witness referred to a meeting of the Canada-British Columbia Policy Liaison Committee, and on motion of Mr. Chatterton, seconded by Mr. Willoughby, it was

Resolved,—That this committee request the production of the minutes of the final meeting of the Canada-British Columbia Policy Liaison Committee.

Mr. Herridge, seconded by Mr. Cameron, moved that this committee, if possible, ask for minutes of the Cabinet insofar as they relate to the Canada-British Columbia Policy Liaison Committee. The motion was negatived, on the following division: Yeas, 4; Nays, 8.

During the meeting the Vice-Chairman took the Chair.

The questioning of General McNaughton having been concluded, the Vice-chairman thanked him on behalf of the Committee.

It was agreed that the committee would sit this afternoon at 3.30 p.m., to resume questioning of Mr. Sexton of Montreal Engineering Company Limited, and would sit this evening at 8.00 p.m., to hear the brief of Mr. C. N. Simpson of H. G. Acres and Company Limited.

At 1.05 p.m., the Committee adjourned until 3.30 p.m. this day, on motion of Mr. Herridge.

AFTERNOON SITTING

(21)

The Committee reconvened at 3.30 p.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Brewin, Byrne, Cadieux (Terrebonne), Cameron (Nanaimo-Cowichan-The Islands), Chatterton, Davis, Dinsdale, Gelber, Haidasz, Herridge, Laprise, Leboe, Matheson, Nesbitt, Pugh, Ryan, Stewart, Turner, Willoughby—(20).

In attendance: Mr. J. K. Sexton, Director, Civil Engineering, Montreal Engineering Company Ltd.

The committee resumed questioning of the witness, Mr. J. K. Sexton.

During the meeting, the Vice-Chairman, Mr. Nesbitt, took the Chair.

And the examination of the witness being concluded, the Chairman thanked Mr. Sexton for his contribution to the enlightenment of the Committee.

At 6.00 o'clock p.m., the Committee adjourned until 8.00 o'clock p.m. the evening.

EVENING SITTING

(22)

The Committee reconvened at 8.00 p.m. this day, the Chairman, Mr. Matheson, presiding.

Members present: Mrs. Casselman and Messrs. Brewin, Byrne, Cameron (Nanaimo-Cowichan-The Islands), Davis, Gelber, Haidasz, Herridge, Laprise, Leboe, Matheson, Nesbitt, Pugh, Ryan, Stewart, Turner, Willoughby—(17).

In attendance: From H. G. Acres and Company Limited: Mr. C. N. Simpson, President; Mr. H. J. Saaltink, Executive Engineer.

The Chairman advised that since the last meeting correspondence has been received from the following: G. R. Guenard, Burton, B.C.; Mr. and Mrs. R. O. Buerge, Burton, B.C.; Apartment and Lodging House Association, Vancouver, B.C.; Mr. Bernard W. Ford, Edgewood, B.C.

Mr. Simpson read a prepared statement and was questioned. He was assisted in answering the questions by Mr. Saaltink.

The Chairman thanked the witnesses for the information which they had provided to the Committee.

At 9.15 p.m., the Committee adjourned until 9.00 a.m., Friday, April 25, 1964.

Dorothy F. Ballantine,
Clerk of the Committee.

EVIDENCE

THURSDAY, April 23, 1964.

The CHAIRMAN: Mrs. Casselman and gentlemen, I see a quorum, so may we proceed?

I appreciate that there are difficulties this morning which arise from the fact that there are several committees, but I do urge members to make every effort to attend these sessions regularly.

Again we have the opportunity to cross-examine General A. G. L. McNaughton, and then we will follow with Mr. J. K. Sexton, of the Montreal Engineering Company Limited, who has been kind enough to stay over, and Mr. C. N. Simpson, president of H. G. Acres & Company Limited.

I have a list of members who wish to cross-examine General McNaughton: Mr. Herridge, Mr. Kindt and Mr. Stewart. I have so far no knowledge of any other persons who wish to ask questions.

Mr. HERRIDGE: Mr. Chairman, I have a few more questions to ask while we have the opportunity to put questions to General McNaughton at this hearing.

General McNaughton, the government has assured us repeatedly that this treaty will not set a precedent. Is it realistic for us to assume that any Columbia development will not profoundly affect any future development we may wish to undertake on international waters anywhere in Canada?

Mr. McNAUGHTON: Mr. Chairman, may I answer that question?

The CHAIRMAN: Certainly, general.

Mr. McNAUGHTON: Mr. Herridge, I think the answer to your question is very important and its conclusion depends upon two aspects. The first aspect is the rights, from the treaty point of view, either under the treaty of 1909 or under the proposed Columbia river treaty and the protocol which is before this committee now; and the second aspect is the question of what I might describe as the physical aspect because, as I have had occasion to say on numerous occasions through the course of this examination, the right under law and the exercise of that law in the Columbia basin or in any other international river basin are two quite different things. On occasion you may have all the rights in the world and yet cannot exercise them.

Owing to the way in which your question is phrased I think I would like to take the international law aspect first. The rights that we have primarily stem from article II of the treaty of 1909, which is a very important pronouncement. Article II is neither the grant nor the denial of privilege to either country; it is in essence a statement of fact, a statement of the basis of law which existed as of the time the treaty of 1909 was brought into effect. It is very difficult to remember, among all these other matters, just what article means.

Each of the High Contracting Parties reserves to itself or to the several State Governments on the one side and the Dominion or Provincial Governments on the other as the case may be, subject to any treaty provisions now existing with respect thereto reserves to itself or—exclusive jurisdiction and control—

That was the customary law in the United States that stemmed from the days of Chief Justice Marshall and attorney general Harmon and others.

That was not the law which was current in Canada at the time before the treaty, but Sir Wilfrid Laurier and leaders of the opposition and the minister of the department of public works and others, as well as the negotiators of the treaty and the government of Canada as a whole, were faced with the fact that if we were to have a treaty of this sort which would bring the squabbles of the boundary over the distribution of water under a code of law at all, the United States made it very clear it would have to be their code of law. Our government accepted that position as a basic provision of this treaty.

In consequence, by agreement, when the treaty came into effect this became the basic law in Canada on international rivers; that is, rivers which flow across the boundary or rivers which constitute the boundary.

The first thing I would like to say about that law is that we know everything in the treaty is subject to abrogation on a year's notice. Therefore, it looks as though this was a transient provision, like the coat of many colours that we can put on or take off on occasion. But that is not so unless you go one step further. Let us suppose, for example, that the provisions of the treaty of 1961 recognize that article II may be abrogated at any time. I ask the question: what happens to us if that is the case? I submit to this committee, Mr. Chairman, that for the United States to abrogate article II makes no difference to us whatever. The United States can only abrogate for their own part a condition which existed prior to the 1909 treaty. It does not affect the rights or obligations of Canada one iota unless, of course, you have reached the point of such integration that the congress of the United States is able to legislate for Canada. Surely to goodness we are not contemplating any situation such as that.

Therefore, I say that even if the United States were to abrogate the treaty, including article II, so far as the rights in Canada are concerned we do not need to have regard to that because it does not affect our rights. In other words, if we decide to maintain article II and continue with the diversions, the fact that the United States should have shown her annoyance by cutting off article II does not affect us one iota; we still have the right to do it if we have the will to do it, which may be another matter.

Basically, I think that is the answer to your question, Mr. Herridge, as to the rights, and what continuity they have. We know that the United States is aware that international rivers are of primary concern to them, rivers which flow from Canada across the United States, generally speaking on the Pacific watershed, not only Columbia basin but all the tributaries that flow up north to the Yukon and Alaska. Canada is the upstream state and the privileges, or the regimen of international law which they imposed upon us, and which they impose upon us in this treaty, have worked out, by the facts of nature and by Divine Providence, to be very much to their disadvantage. Nearly all the great power rivers that have this international character originate in Canada. The consequence of that has been that in the forums in which the law of water is being discussed prior to making a report at the request of United Nations, the force of the United States argument, to my knowledge—from the conference that was held at Dubrovnik through all succeeding conferences—and all their weight have been set to outmode this provision which today is of very great advantage to us.

So, wherever you find United States people speaking, you find that overriding United States policy being expressed. In connection with this treaty there is a particular example which I would like to draw to the attention of the committee regarding this very important aspect of International law, as to whether we have any continuing rights, or whether this treaty would have any effect. If you want to know that the effect of a document is or a pronouncement of policy, you had better look at the views expressed by responsible spokesmen for the other side.

In this case I would direct your attention to the remarks made by Mr. Kearney to the committee on foreign relations of the United States Congress on March 8, 1961, when the Columbia River Treaty, signed in 1961, was under consideration for ratification, and where it was in fact ratified.

Mr. Kearney was asked by one of the senators:

Senator Lausche. —This treaty may be declared to confirm the opinion of some that there are legal rights of a neighboring country in the waters of an adjoining country and that, therefore, changes in flow, either lifting or lowering them, constitute a violation of a legal right, and can only be achieved legally through a treaty.

Mr. Kearney: Yes, sir. I think senator, that this treaty will be considered as adding to that body of law.

However, I would make this footnote: This treaty is a rather unusual situation because we do have the 1909 Boundary Waters Treaty with Canada, which sets up certain legal rules between our two countries and, therefore, we are in a somewhat different situation than two countries where there are no rules whatsoever.

However, I would say that the trend in international law is strongly toward the establishment of the principle that an upstream riparian state cannot deal with the waters within its borders which cross its boundary to a downstream riparian state in such a way as to seriously impair the rights or interests of the downstream riparian state.

This was the Mr. Kearney whom we know very well because he has on many occasions when I was chairman of the Canadian section of the International Joint Commission been counsel for the United States, appearing before the commission.

That comes straight through as the objective of American policy, which was imposed upon us by that same country some years ago when we entered into the Boundary Waters Treaty. And that is said with all deference to the legal acumen of the Secretary of State for External Affairs who, I have no doubt, propounded the proposition that article X of the protocol under the heading "contribution to international law" as it now appears in the blue book does not constitute any precedent.

It may be correct in a narrow and strictly legal sense of the matter to say that if there is a case before the international court of justice based on the law as expounded in this treaty, you could not go before the court and argue that this was a precedent. But formal precedents and the actual practice based on public opinion are of course two different things.

I think whatever people may have to say, particularly having regard to what the law officers of the United States have to say in the ratification of the treaty, we have to realize that this treaty of 1961 is a powerful instrument in changing the policy on which we have been depending as to interpretation for some 50 years.

Now, as regards the practicability of these diversions and so on—

The CHAIRMAN: Does that answer your question, Mr. Herridge?

Mr. HERRIDGE: I would like to ask the general to complete his answer. I think he was going to summarize.

Mr. McNAUGHTON: As regards the other aspects, whatever the rights may be, have we got the right to exercise the rights, under this treaty? I pointed out that the great mistake made by the army engineers in the United States, and by others concerned with waters, was that they fell for the alluring appeal of developing spectacular at-site plants down the Columbia river and making the power available on the flow of the river without very much in the way of upstream storage being provided, that being at a time, of course, when they

developed things when the going was good, and with which they could appeal to the public, and they thought they could pick up matters of regulation later on.

I do not think that most people in those days realized how important regulation was; but when they came to provide storage which was necessary for at-site plants, they found that the developments which had taken place in the basin were so large and so expensive that the property values and the industrial establishment and other uses—even those of wildlife and fish—had become so important that the public would not let them have those areas. That was a very great mistake.

I think these things and the fact that in the Columbia basin developments, the only upstream storage that was available in the Grand Coulee and some of the upper storages, had a capacity of only 5 to 6 million acre feet on the flow of the river, whereas when they had got the full quota of upstream storage power output had gone up to ten or eleven million, perhaps more, of kilowatts show the importance of upstream storage.

For proper planning in Canada our first duty is to make sure that we do not make the mistakes that the United States have made and which they bitterly regret to this date. I say to you that it seems—and certainly I think it is evident to all who consider this matter—that we must have a set plan of best use development, and that we have to develop our storages simultaneously with the at-site plants which go with them to make sure that we have these storages, because if we do not, the values of the real estate and so on have gone up so that the provision of upstream storage later on becomes an academic business.

It has been recognized by a number of people, governments and others, that the Bull River-Dorr complex with the storages placed in relation to supply and altitude maximize the importance of storage and give us this result. I submit that if we do not make available this service now, you can talk about law and legal opinions and all the rest of it, and it does not mean a thing at all. Does that answer your question, Mr. Herridge?

MR. HERRIDGE: Yes, sir. Now, I have another question directly related to it. I remember that a former Liberal government was very concerned about the possibility of some developments in relation to the Yukon which some United States company claimed to foresee. If we are of the opinion that this treaty does establish a pattern, what do you think will be the likely affect in the future with developments on the Yukon river?

MR. McNAUGHTON: I think Mr. Herridge, your question is one of very great significance and importance because whatever the outcome of this treaty, so far as the treaty is concerned it is admitted that it will react on the statement that the United States has made, and whether it is called a precedent or not, it will act as a powerful stimulant to the construction of a dam at Rampart on the Yukon river.

This dam is scheduled to have an installed capacity in excess of four million kilowatts. The flowage will go right up to the boundary between Alaska and the Yukon Territory. Under the doctrine of first in time is first in right, which the United States asserts on all occasions, rightly or otherwise, once they build this dam and have taken these waters into use they will assert that right against Canada.

What does that do to us? We have two major power possibilities in the use of those very same waters. The first I would mention is on a river called the Taiya river, which is a proposal made by the Aluminum Company of America, a proposal which for a time was current in our own departments of the federal government here as the right course to follow, and a proposal which, when Mr. Lesage and Mr. Robert Winters came into office, promptly was terminated because it meant the use of Canadian flows to create great at site plants downstream underground along the Taiya river which were to be

owned by the United States company, and which would become a prior approbation to prevent the beneficial use of the Alaskan waters within Canada where there was an alternative.

I would like to mention that I have some first hand knowledge of this particular proposal, because I accompanied the minister on the occasion on which he told the Aluminum Company of America that this matter was contrary to the policy of the government of Canada, and that the temporary licence which this company had obtained from the water resources branch would not be extended.

Now, why did the minister do that? Well, first of all, I submit he was having a proper regard to the uses of the Canadian resources being for Canadians. The second thing is, a Canadian company at the same time was considering a very much more beneficial development on a river somewhat down to the south, the Taku. In this development there would be dams built in Canada on the Yukon river and on some of the principal tributaries of the Yukon river and system of canals would have brought that impounded water by gravity to Atlin lake, and from Atlin lake the scheme was to drop this water through a head of 300 feet; an attractive development with a drop of water into the Pacific.

That use of those waters in the Yukon led to an estimated physical capacity of some six million kilowatts. In talking to the chief engineer of the project, I have been told that with some slight additions and modifications that capacity could be increased to eight million kilowatts.

So, in sitting by and allowing precedence to be made by this treaty of 1961, in the factual sense even if not in the legal sense, we are putting in hazard the use of the Yukon waters for perhaps eight million kilowatts, whereas if the United States made use of them they might get half as much out of them. In considering the benefit to the public of both countries, without regard to the boundary, the United States development is less efficient than the one we have in our own hand to do.

Further, to answer your question, I think the signature to this treaty is a powerful impetus to the United States in taking the bull by the horns and going right ahead, as the state of Alaska wants them to do. It might be a little difficult now because of the earthquake in that region. I have not been able to find out from any of my acquaintances up there what effect this has had on this particular development on the Yukon river, and whether or not it will be carried out, or whether it is a practical matter now in the face of the damage. Nevertheless, there is a very powerful force of public opinion on the Pacific coast wanting to carry on with this development, primarily with relation to the production of aluminum because they are looking at a monopoly, which they have stated quite openly before the public works committee of their Senate. Quite openly they are hoping to capture the market of the Middle East, Japan and other countries. As a byline to that, what does that do to one of the flourishing industries of Canada? I will make the prophesy that if other things are cleared up, they will step in and take this. That is the answer to your question.

Mr. HERRIDGE: Thank you.

With regard to the testimony of the witness for the Montreal Engineering Company Limited yesterday, it was indicated that the suggested plan to pump water over the mountains to the prairies was too fantastic to be worthy of consideration. That is the general impression created by the testimony. Do you agree with that?

Mr. McNAUGHTON: No sir, I do not.

Mr. HERRIDGE: Why not?

Mr. McNAUGHTON: Well, I would say that I had very considerable—

Mr. GELBER: May I make a correction, Mr. Chairman. I think Mr. Sexton said that to pump it over to the prairies to generate power would not be worth the effort. That is what he said.

The CHAIRMAN: Thank you, Mr. Gelber.

Mr. HERRIDGE: Reading from page 35 of the brief, the testimony was as follows:

Hence the proposal to pump Columbia river water up the west side of the Rocky mountains to generate power on the east side could be likened to depositing \$1 in the bank in British Columbia in order to draw out 50 cents on the prairies after paying a \$2 charge.

Mr. GELBER: That is quite correct, but this power was related to the necessities for multi-use of this water to make it economical for irrigation. So, the two are related.

Mr. McNAUGHTON: Mr. Chairman, in commenting, my answer applies whether it is for irrigation, by itself, or in a multipurpose project for power. Careful consideration of the preliminary studies which have been made at the instance of the Saskatchewan Power Corporation, carried out by a very eminent firm of engineers who are very familiar with the area—and which, as I say, has been reported by Mr. Cass-Beggs—shows, to my mind, that the uses of the water in the prairies—which originated in Canada and which, under the treaty of 1909, is the right of Canada to dispose of as may be expedient—with the rising values of water are things which constitute a birthright which we have no business to negative in any way.

There are distinct possibilities in respect of the use of these waters in multipurpose projects for power and flood control, with the emphasis on the increasing values for consumptive purposes, which is something of first significance. Whatever we do, we should not lose sight of these rising values for that purpose, which should be preserved for posterity in Canada.

One of the projects I happened to have studied was Mr. Cass-Beggs' and Mr. Crippen's report with regard to the availability of the use of the water stored in the high altitude storages completed under sequence IXa in the east Kootenays and for their diversion by way of the Elk river, Crowsnest pass, and into the headwaters of the South Saskatchewan where they immediately can be put to use. The estimated cost, which is based on very preliminary figures given by the Saskatchewan Power Corporation, is \$7 an acre foot.

Mr. PUGH: What was the amount you just gave?

Mr. McNAUGHTON: The amount is \$7 an acre foot delivered.

I think the first day I appeared before this committee I spoke of some of the values of these waters for purposes of irrigation. I have no particular figures in respect of the use in the prairies for each form of agriculture which is there. I was not able to get these figures in time. However, I know generally what they would be in the area around the Palliser triangle, where we would want to use these waters. No one knows better than Mr. Herridge and the members from Saskatchewan that is a region which once was labelled a desert, and which has been subject in our own experience and lifetime to periodic cycles of low water. But, in between times it is one of the most prosperous agricultural areas in the world where wheat growing is carried on. At any time we may have to turn to additional water. So, even the present day values of the citrus orchards of California are not beyond comprehension in respect of the values of water on the prairies. The figure I gave you for California water now delivered is \$50 an acre foot, which is seven times the gross value of Mr. Cass-Beggs' estimate to get it there. And, I submit, this is a practical possibility which no one can laugh off.

Mr. DINSDALE: Mr. Chairman, I have a supplementary question.

General McNaughton, would not the feasibility of this diversion scheme depend upon the willingness of the government of British Columbia to permit diversion? Is this not fundamental?

Mr. McNAUGHTON: I would think it is an interesting fact that the engineering firm which wrote several of these reports is the same firm which is working for the British Columbia government and for the government of Saskatchewan Power Corporation. As I say, this is very interesting; this is a firm which is putting forward their judgment in these reports, endeavouring to satisfy a criteria of public interest, and not playing favourites. This aspect is taken out.

Mr. LEBOE: Mr. Chairman, General McNaughton has not answered the question. Will he do so?

Mr. HERRIDGE: He is answering it; let him complete his answer.

The CHAIRMAN: Gentlemen, I do think Mr. Leboe's point is relevant.

Mr. LEBOE: Mr. Chairman, I just want the general to say if British Columbia did have the right to say whether or not the water would be diverted. The references to the British Columbia Hydro and Power Authority and the Montreal Engineering Company have nothing to do with the question. This is my point.

Mr. McNAUGHTON: Quite frankly, the basic law that governs the use of these waters is not the law used in the treaty in cases where rivers do not flow across the border. This is based on riparian law. In that case I think British Columbia has a very important right. But, where it is a matter of public interest, whether these waters are to be used in a sister province, or whether they are to be dedicated for all time to the service of a foreign nation, I do not the people outside of Canada should get first call on the waters. In fact, I have think a responsible government in British Columbia would take the view that heard them state that that is not their view either.

Mr. LEBOE: The question has been answered. He said they had the right and that is all we want to know.

Mr. HERRIDGE: Mr. Chairman, I have another question.

Mr. CHATTERTON: I have a supplementary. Would the general not think if Saskatchewan was interested in this water being diverted they at least would make known their interest to the government of British Columbia?

Mr. HERRIDGE: They did.

Mr. McNAUGHTON: Mr. Chatterton, I have no means of knowing now what communications are passing between provincial governments and, therefore, I cannot answer your question.

Mr. CHATTERTON: Well, Mr. Williston said the government of British Columbia never had received any communications from either the governments of Alberta or Saskatchewan in respect of these waters.

Mr. McNAUGHTON: Well, you have more information than I have.

Mr. PUGH: I have a supplementary question.

Mr. WILLOUGHBY: Mr. Chairman, I have a supplementary question.

In view of the fact that the northern waters are more available to the prairies at the present time, how long do you think it might be before the water from the Columbia would be required on the prairies?

Mr. McNAUGHTON: I think the answer to that is in the reading of these preliminary reports, where the water is going to be wanted in the first instance for the South Saskatchewan river, and this water is not going to be wanted in the vast quantities that are involved in an economic development from the Mackenzie or Peace rivers. From information gained from the reports there is no doubt that in respect of a very large development you may have to use

these northern rivers for diversion, but for the moderate sized development to supplement the storage on the South Saskatchewan there is evidence in the preliminary reports that we should look to the conserved waters of the Kootenay, as I have indicated. Now, these are matters which I do not think are possible to judge on the kind of reports which so far have been made available but I do think that the significance of it is such that we should be very very careful that any water which can be taken to meet the dire needs of the prairies in the future should not be hypothecated.

Mr. WILLOUGHBY: In view of the fact these other waters should be available for many, many years to come before the waters of the Columbia might be necessary could we not then divert the Columbia when and if necessary?

Mr. McNAUGHTON: That is one of the matters I have been endeavouring to make clear. The storages, in essence, which are required for the diversion I have mentioned and which are mentioned in these other reports, require the high altitude storages in the Kootenays in order to collect the flows. Of course, there are possibilities of taking water from other rivers back into the Columbia basin before it crosses the boundary or for power purposes for British Columbia by arrangement primarily with Alberta.

Mr. DINSDALE: Mr. Chairman, I should just like to draw attention to one further point for clarification of General McNaughton's answer. I take it, General McNaughton, that you would agree that the government of British Columbia has the right, because of its jurisdiction over resources, to veto diversion? The representatives of British Columbia when they were before this committee indicated that British Columbia would not agree to diversion across the mountains under any circumstances, and I presume this was their attitude during the negotiating of the treaty and, therefore, this would affect the course of the negotiations? Would you agree with that statement?

Mr. McNAUGHTON: Again I am speaking as an observer of international law and not attempting to set myself up as an authority; I tried to deal with that point in my correspondence with the secretary of state. It is my firm belief that final jurisdiction in respect of waters which may flow through natural channels across the international boundary, by the principles of the British North America Act and by the assertion of jurisdiction made in a recommendation in this committee in the International Rivers Improvement Act, rests clearly with the government of Canada. It would be exercised if need be in a proper case for the benefit of Canada as a whole. That would be my thought in that regard.

Mr. BREWIN: Mr. Chairman, I should like to ask a supplementary question on this point. General McNaughton, in your letter to the secretary of state dated September 23, 1963, at page 2 you refer to a statement made by Mr. Lesage which you say appeared in the *Electrical Digest*. You have already discussed the first two paragraphs of that letter with the members of this committee and I think you expressed the view that the government of Canada was the final authority. What I should like to ask you about at this stage is an article you referred to appearing in that *Electrical Digest*. I have a copy of it before me which I believe is the July issue in which appears the article by Mr. Lesage wherein he says, speaking for the government of Canada at that time, according to the Canadian constitution works built on rivers in Canada and having an effect outside the country fall under the jurisdiction of parliament even if they are entirely located in one province. Is that the reference you had in mind?

Mr. McNAUGHTON: That is one of many references I had in mind. Incidentally, I should like to say that at the time Mr. Lesage wrote that article to which you have drawn attention he was the minister of resources

in Ottawa. I was in almost daily contact with him in relation to these particular waters crossing the boundary. I also have reference to a speech made by Mr. Lesage to the Civic Northwest Trades Association, of which I have a photostatic copy here, which was an expression of government policy. It was my duty to implement that policy in the commission so far as possible. I am a great believer in this statement of policy.

Mr. BREWIN: General McNaughton, the article indicates that it is a federal government official view, and there is a picture of Mr. Lesage. It says that according to Canada's minister, the Hon. Jean Lesage, we have definite views of the laws governing water power resources. He is asked what they are and Mr. Lesage indicates that they are very good views in his judgment.

Mr. FLEMING (*Okanagan-Revelstoke*): What is the date of that article?

Mr. BREWIN: It is dated July, 1955.

Mr. BYRNE: Mr. Lesage was a great centralist.

Mr. BREWIN: He was very well informed.

The CHAIRMAN: Gentlemen, I do not wish to intervene but on my list of members wishing to ask questions I have Mr. Herridge, Mr. Kindt, who has been very patient, I think he says for four days, followed by Mr. Cameron and Mr. Pugh. As you all know, we have one gentleman who has come here all the way from Labrador to appear before us today. We also have Mr. Sexton who has come here from Montreal and is staying to complete his testimony. I should like to ask members to bear these facts in mind.

Mr. HERRIDGE: Mr. Chairman, the questions I wished to ask have been brought out through supplementary questions and I am very pleased to relinquish my place on the list of questioners to Mr. Kindt.

Mr. LEBOE: Mr. Chairman, I do not think we should leave the impression on the record that Bill No. 3, which was the international waters bill, left complete control with the government of British Columbia in respect of power resources and waters in British Columbia. I think that point should be made quite clear.

The CHAIRMAN: Thank you Mr. Leboe.

Mr. BYRNE: We have another international lawyer.

Mr. KINDT: Mr. Chairman, I have made notes during the testimony to assist me in asking questions in respect of a statement appearing at page 3 of General McNaughton's submission where he states:

—thereafter—forever—directly for flood control—

In other words, even after the treaty has ended or is discontinued, Canada has assumed the obligation of regulating the flow for flood control purposes of the Columbia river forever. This statement is made in your submission but I have repeated it to provide background for the questions I wish to ask. I should like to refer to a number of features of this protocol which have not been brought to the attention of this committee as yet. I think it is important that we discuss all the angles of this treaty, including the one to which I have referred, because of the obvious interests on the part of the citizens of this country indicated by the number of questions being voiced in letters which I have received. Does this aspect of the treaty actually last forever? I think there are two sides to this question and I will attempt to bring out both sides.

The CHAIRMAN: Excuse me, Mr. Kindt, are you leading up to questions?

Mr. KINDT: I am laying the foundation for questions I wish to ask.

On the lower Columbia the main flooding takes place around the Dalles and Portland because of a lower gradient in the river in that area, is that true?

Mr. McNAUGHTON: That is true.

Mr. KINDT: Flood conditions may be approached in two ways. One way would be to move these people to higher land utilizing these flood plains, for example, for golf courses, parks and pastures. In other words the land should be zoned for uses to prevent the building of houses and high costly buildings, minimizing the damage of any flood, is that true?

Mr. McNAUGHTON: That is true.

Mr. KINDT: We must also consider the aspect of the situation that the values of the land in those areas is affected by the fact that flooding is likely to take place there.

Now, what I mean by that is that if you buy a piece of land on the flood plain in Portland you buy it at a fair sale price because the people there know that within two, 10, 20, 30 or even 60 years you might have high floods. The purchasers will buy that land with that thought in mind. Is that true?

Mr. McNAUGHTON: That is true.

Mr. KINDT: If the view is circulated that action is going to be taken which will lower the flood crests, the real estate sharks will develop those lands to the maximum.

Mr. McNAUGHTON: That is right.

Mr. KINDT: In another place in your presentation you said this would amount to millions.

Mr. McNAUGHTON: It is a matter of billions.

Mr. KINDT: Now, the people in the United States who want to bring this about are the people with the millions who want to make billions. Let us establish this point without any equivocation.

The CHAIRMAN: I am sure the general will not equivocate.

Mr. McNAUGHTON: I will not.

Mr. KINDT: Now, we have all established the other point that the correct way to control flood on the lower Columbia—and the United States army engineers know it—is to move those people on to higher ground. However, when it comes to moving, you have a problem. When the flood gets up around the first window of a house, or even the second window of a house, then that property owner becomes very co-operative. You can then take the \$64 million for which they are trying to build storages in Canada and spend it where it ought to be spent, that is in moving those people up to higher ground. Do you agree with that?

Mr. McNAUGHTON: Yes.

Mr. KINDT: Why is the United States not doing that? Why have the United States engineers not brought forward a program which would move those people on to higher ground? See if you can agree with the following: The reason is that when a flood occurs and water reaches the upstairs window of a property owner, he becomes very co-operative at that time, but when the flood goes down and he clears up and scrapes and cleans up, he would not sell his property for anything and he will not move. However, lo and behold, the politician tries to get him to move while the army engineers, instead of recommending the movement of those people, say no. Is that right, General McNaughton?

Mr. McNAUGHTON: Yes, sir, and what is more, after the flood has passed they move back when your back is turned.

The CHAIRMAN: I hope, Mr. Kindt, you will allow some members of the committee to question you here.

Mr. KINDT: All these points have been brought out and what I am trying to do is to relate them and to get them out on the table so we can have another look at them. I have only taken up six minutes of the time of the committee.

Mr. LEOE: Take your time.

Mr. KINDT: I think we want that information. This is not my view; it is the view of others who have been speaking to me. What I am trying to do is to relate these points in terms of the problems which this committee has to consider, namely the problem of flood control and the other problem of the multiple use benefits on the Columbia.

I have one other point on that subject. There is no shadow of a doubt that at the backs of the minds of the United States army engineers was the conviction that this treaty has come about—at least from their point of view—in the interests of flood control, and not power. Is that right?

Mr. McNAUGHTON: I made the statement in my opening remarks that this treaty in essence, first and foremost, is a flood control treaty.

Mr. KINDT: That is why they want this "forever" aspect in the treaty.

There is one other point. A flood on the lower reaches of the river might occur from a flash flood. For example, I would compare a flood to a piece of rope which you snap. You will then find a loop that goes down that rope to the end. The synchronization of the flood crest is when you get two of those floods coming together at one time, such as at the Dalles. To prevent that, you build structures in the headwaters. Is that right?

Mr. McNAUGHTON: Yes.

Mr. KINDT: You build those structures to slow up that river so as to let the flood crest of the other river go by and thereby avoid the synchronization of the flood crests. Is it possible that dams a thousand miles away in Canada can be operated in such a way as to materially affect the synchronization of the flood crests on the lower Columbia?

Mr. McNAUGHTON: Nearly a quarter of our dams are capable of interrupting the particularly damaging floods in the lower basin of the Columbia.

Mr. KINDT: What you are saying then is that you are lowering the flood crest. Now, a flash flood could come, and you would still have floods. In other words, a flash flood might be called a 30 year flood or a 20 year flood, and theoretically it is one of those floods that are caused from a downpour of rain lasting six or 10 days as a result of which the ground becomes soaked and the water swooshes in creating a loop which goes down the river and causes a tremendous flood. Such a thing might occur without a drop of water falling into the watershed of Canada. Is that right?

Mr. McNAUGHTON: That is right.

Mr. KINDT: Do you agree that this is only 16 per cent of the watershed in Canada?

Mr. McNAUGHTON: A much higher proportion than 16 per cent of the floods are thus produced in Canada.

Mr. KINDT: That is because of the run-off in the other place.

I would like to bring out an additional point. Just how much should we worry about people whose property values have already been reduced for two or three decades owing to the hazard of floods? In other words, these people expect floods every so often and they pay for their property accordingly. To what extent should newspapers play up the fact that damage owing to a flood reached so many millions of dollars, when after all these people paid less for their property? Why should we worry too much about building dams in Canada to take care of something that has already been taken care of by private enterprise? Would you agree with that?

Mr. McNAUGHTON: To a certain extent, Mr. Kindt. The basis I have accepted in the presentation of the flood control principle No. 6 in the I.J.C. which preceded the negotiations was that within the limits of the ordinary damage which occurs from floods originating in Canada it was the part of a good neighbour to offer protection on an insurance basis. The United States themselves have stated categorically what control is needed in order, for practical purposes, to prevent damage from the kind of floods that are likely to be originated in Canada; that is what they call their primary objective, the reduction of a flood of 1894 magnitude from 1,240,000 cubic feet per second to 800,000 cubic feet per second at the Dalles. I think everyone agrees that this is a reasonable objective.

What we in the I.J.C. proposed to the governments was that we would agree that storages up to those amounts should be available to do that task on the basis that Canada would be paid one half of the damages prevented by the storages that we made available. We went on in the I.J.C. to provide that the amount of storage called for by the United States was at the option of the United States and they were under no obligation whatever to ask for any of our storage if they did not want it. However, if they asked for it, we should give it to them, but there would be a deterrent, and the deterrent was that they should pay for it.

Mr. KINDT: Having brought out the point that the operation of the storage dams in Canada would take the crest off the floods, as well as my previous point, let me point out that there is likely to be a feeling among the people of the United States, and especially those dealing with real estate and wishing to create tremendous developments on the flood plains, that Canada is going to completely eliminate floods. That is not true. You cannot build dams in Canada which will remove the danger of lesser floods on the lower reaches of the Columbia. Is that correct?

Mr. McNAUGHTON: That is right. The quantity of storages required for carrying out these objectives of flood control from 80,000 cubic feet per second to 600,000 cubic feet per second, and according to the current thinking of the United States engineers to 450,000 cubic feet per second, are simply astronomical.

Mr. KINDT: In other words, the flood control is relative and those who know little about watershed development are likely to read into what we are doing in this treaty the thought that floods will forever be controlled on the lower reaches of the Columbia. This is untrue if only for the fact which you have already stated that floods will occur without a drop of water falling in Canada; that is a 30 year flood could conceivably come to the Dalles and to Portland from the Snake river and from areas within the United States, therefore, there is a very great danger of blaming Canada when future floods occur. Would you agree with that?

Mr. McNAUGHTON: Yes, I agree with that fully and I made that the burden of my argument regarding the rewording of the protocol, namely that there should be a definite limit on the flood control objective. It seems to me that when they push flood controlled areas into the plain of the river, emulating, as I have said, King Canute who got himself drowned in the process, then we should stay aloof from it. This is what this protocol does not do.

If you look at paragraph (3) you will see that in place of maintaining the objective of 800,000 cubic feet per second control you have now made this paragraph entirely open for the United States to develop any flood control objective they may wish and to have all the storages in Canada used for that purpose. I refer to the words, "not be adequately controlled" in paragraph 1(2) of the protocol. "Adequately" is a word that permits the United States army engineers to develop their hold on the use of Canadian storage

to any extent which they may consider appropriate, thereby making us the creators of storage space to suit their convenience, whatever it may be, whether it is really needed or not.

I submit that this is a servitude which should never be placed on Canada.

The CHAIRMAN: Mr. Kindt, would you suffer a supplementary question from Mr. Pugh?

Mr. PUGH: Would the Canada plan have provided better flood control or any guarantee against flooding in the lower Columbia basin?

Mr. McNAUGHTON: In flood control principle No. 6 which we have put forward in response to the instructions of the government we accepted in principle a control to eliminate existing damage in the primary objectives, namely the present objective of 800,000 cubic feet per second at the Dalles which defines the objective.

We propose that all the storage in Canada which is available to create storage space should be operated as necessary to meet that objective—no more, no less—and that there should be a deterrent because the principle of half the damages prevented to be paid for was maintained.

Mr. DAVIS: I have a supplementary question. The main burden of General McNaughton's remarks, as I take it, is that Canada has an unlimited obligation to look after floods occurring in the United States. I think I would be inclined to agree with him had the treaty not been supplemented with the protocol. However, item 1 (1) of the protocol quite specifically says:

—the need to use Canadian flood control facilities . . . shall be considered to have arisen only in the case of potential floods which could result in a peak discharge in excess of 600,000 cubic feet per second at The Dalles.

That is the intent and purpose of that section.

General McNaughton goes on to the second subparagraph and makes reference to the unlimited call upon Canada. I would say that the purpose of the second subparagraph was to say that the United States reservoirs, to the extent they exist, must all be used to the full before the Canadian reservoirs are used at all. That is the only intent and purpose of the second subparagraph. In other words, the protocol is a substantial improvement on the treaty. It defines a flood and it requires the United States to use its own reservoirs.

Mr. McNAUGHTON: I do not know whether it is permissible for the witness to ask the interrogator a question.

The CHAIRMAN: Please go ahead.

Mr. McNAUGHTON: Where does Dr. Davis find the instruction that the United States is in fact to use their storages? Where is the guarantee that their storages will be used before Canadian storages?

Mr. DAVIS: In article I (2) of the protocol.

Mr. McNAUGHTON: I would say concerning the wording of article I (2) of the protocol, like so many of the clauses which have gone into this treaty, that the protocol defines a condition but fails to provide the executive order to carry it out.

Mr. DAVIS: It defines the obligation of the United States.

Mr. McNAUGHTON: That is the measure for the calling in of Canadian storage. Having established that requirement for the use of storage, there is nevertheless no executive order to force the United States to use their own storages before they use the whole of the Canadian storage available.

The CHAIRMAN: I think we are losing Mr. Kindt.

Mr. KINDT: The dams which are constructed in the United States, I think Mr. Davis and Mr. McNaughton would agree, are multiple purpose dams, or

supposed to be, as everyone knows. Now, if you are going to get the maximum use of a dam, it should be filled with water if you are going to generate power, but it should be empty if you are going to use it for flood control. The two purposes are diametrically opposed.

That holds true of all dams in Canada as well as all dams in the United States. There are certain dams on the Snake river, in the headwaters which are multiple purpose dams. They have a certain amount of storage, but they would not necessarily, in their present location, or if additional dams were constructed, prevent floods of a magnitude of a two year flood or a five year flood or a ten year flood, or a twenty or even a thirty year flood at the Dalles and Portland; and it is a matter of fact regardless of how many dams you build, you are not going to avoid floods and flood plains. Would you agree to that?

Mr. McNAUGHTON: That is right.

Mr. KINDT: Now, having established that point.

The CHAIRMAN: You are inclined to lead, Mr. Kindt. You have a tendency to lead.

Mr. KINDT: I am trying to pull together.

The CHAIRMAN: You have certainly established yourself as an engineer. Would you be good enough to let the general reply.

Mr. KINDT: All right. I want to get the facts out on the table, and if I did not have to suffer so many interruptions, I would probably be able to do a little better job.

The CHAIRMAN: I shall try to remain silent.

Mr. KINDT: I am trying to give this committee the benefit of four years of watershed development as an employee of the United States government.

The CHAIRMAN: That is precisely the point. You are not the witness. The witness is General McNaughton, but you are tying in your observations with general conclusions during the course of the discussion without giving the witness an opportunity to do anything beyond nodding his head. Please remember that we are trying to deal with one proposition at a time in a generally orderly way.

Mr. KINDT: Very well. And now I have completely forgotten what my other point was. Maybe it will come back to me. I think you had better keep quiet.

The CHAIRMAN: All right, I shall remain silent.

Mr. KINDT: We have established the point that these people should be moved to higher ground if you are going to avoid floods, because you will always have floods. That is important. Would you agree with me that they should be moved to higher ground?

Mr. McNAUGHTON: It is important that life should be preserved.

Mr. KINDT: Yes. In other words it is important to move people to higher ground; so they are asking Canada to spend \$64,000,000, and giving us \$274.8 million to build dams in Canada to take care of a situation that they should take care of themselves and move those people on to higher ground. Why are they not doing it themselves? They are not doing it themselves because this is a political problem, and it is not political expediency to get men to move off the flood plains in the United States. Would you agree with that?

Mr. McNAUGHTON: Yes.

Mr. KINDT: All right. A lot of people may hear the bell ringing, but they do not know where it hangs, but it hangs right over political expediency to get the United States congress to do the thing that they ought to do without

asking Canada to take care of their flood control problems. But they say that forever we have to take care of it, to build dams in Canada, and they pay us \$4,000,000 or other sums like this.

I will go further and say that we ought to do everything that the general has said in order to help the United States with flood control as a good neighbour policy. I am not anti-American. Nobody in Canada should be anti-America. We have to live with these people and work with them, but we do not want to have it crammed down our throats that we have to do this thing. Yet here it is written right in the treaty that we have to do it forever. It is not a co-operative deal or anything else. Is the proposition you have brought it within these thoughts?

Mr. McNAUGHTON: I agree wholeheartedly with what you have said, that these provisions, both in the treaty and as further developed in the protocol, we have put the whole of our storage in Canada, every acre foot of existing storage, at the call of the United States to meet whatever objectives the United States army engineers may care to call for, adequately controlled. We are underwriting an unlimited liability should we accept this treaty.

Mr. KINDT: You are right. And since we have mentioned the army engineers let me say that there is no more efficient group of engineers in the world.

Mr. McNAUGHTON: That is right.

Mr. KINDT: I refer to the army engineers. It was my privilege to work with them for four years. I took a Ph.D. down there and they gave me a job on a temporary basis and I worked with them for four years. Since I have engineering training along with economics, they made me head of the economics of flood control, and I had about ten engineers and ten economists under me in the building of the dams on the Conasauga and Oostanaula in Georgia, and in addition we planned the big dam at the head waters of the Potomac above Washington, and the people in my set-up were the very ones who worked on the Columbia. So I know what is going on on the Columbia. Do not let anybody tell me that I do not know what I am talking about. What I am trying to do is this: I am a Canadian first and I am a politician second. I realize we have to get these facts out on the table regardless of who talks about them. There is a lot of prejudice and there are a lot of people who might try to hang you for this that or the other thing. But I do not think that should be attributed to this committee, and I feel that we are duty bound to get the facts on the table and get them related, because there is nothing more complicated than the development of watersheds. Now, I have a couple of very very important points.

The CHAIRMAN: Would it be possible for you to make your points in the form of questions, because we have in addition to the general two other witnesses.

Mr. KINDT: All right, I shall do so. Now, concerning the tangible and the intangible benefits, and the High Arrow under the treaty, have you any information on what was done there in respect of intangible benefits? I hope everyone is familiar with what it means in flood control and watershed terminology when we speak of intangible benefits. Intangible benefits mean such things as moving people, aesthetics, the damage to property when there is no more fishing there, and no more shore lines—all of these things are intangible values which, if you are going to get at the real cost of the project to the people of Canada, have to be taken into consideration. You have to place a monetary value on them and then deduct it. How was that matter handled in this treaty?

Mr. McNAUGHTON: The basic figures on which these expected damages, particularly floods of various magnitude, were calculated, were average figures propounded by the army corps of engineers.

It is my understanding of these calculations—which are set forth in considerable detail in the United States army report No. 308—that the intangibles and consequential damages are not included. For example, if you provide the unlimited type of flood control which is mentioned in the protocol down below The Dalles, the real estate values go up very quickly, as some people say they might, by \$1 billion in one city alone, Portland. There is no part of that which enters into the figures for damages protected against, but it is a very real benefit that would flow from Canadian storage.

It is my assertion and my conviction that these intangibles, as you call them, which have been left out of the specification of damages prevented, for which we are supposed to be given half during the lifetime of the treaty and nothing thereafter, are very much underestimated.

Mr. KINDT: In other words, do I learn from your evidence that the negative values—or call them negative benefits, if you like—have not been properly handled.

Mr. McNAUGHTON: It is my view and has been my view all the way through the piece that one of the first things that should be done is that a Canadian group—a group including economists and statisticians—should reassess the values that are at hazard under various conditions and obtain an average figure of damage prevented which we can use with confidence over the whole period of our agreement with the United States.

Moreover, since these values are changing and are going up very rapidly with development, particularly once you start giving flood control, you have these enormous increments in real estate values. The values ought to be reassessed for purposes of flood control at least once every 10 years as a matter of standing procedure.

Mr. KINDT: Mr. Chairman, I think that pretty well clears up that particular question. I still have one more.

Mr. PUGH: Was this discussed in the International Joint Commission; was this principle of flood control discussed among yourselves in the International Joint Commission?

Mr. McNAUGHTON: Yes, Mr. Pugh; this was very, very closely discussed and the principle is set out in flood control principle No. 8 in the report of the International Joint Commission. Later, as one gained more experience after those principles were in, it became evident that the whole burden of operation would be thrown on to Canada; that our payments would be trivial and would not constitute a deterrent to abuse. Very early I advocated that the proper deterrent to abuse should be incorporated along with flood control principle No. 6. I gave that in very considerable detail in the presentation I made when I first came before you. I can repeat it now if you wish, but I do not want to take up too much time. May I refer, in answer to that, to my preliminary brief as a source paper.

The CHAIRMAN: Yes.

Mr. KINDT: To continue, Mr. Chairman, the witness has brought out in his evidence, yesterday, that this plan which now is embedded in the treaty was and is primarily a plan of the United States army engineers.

Mr. McNAUGHTON: Yes, sir.

Mr. KINDT: You stated that. Is that right?

Mr. McNAUGHTON: I was in on the original discussion in respect of it, and it was promoted and propounded primarily by the United States army engineers.

Mr. KINDT: Somewhere you also stated that the United States army engineers did the figuring, the computations.

Mr. McNAUGHTON: Yes. The computation was done in their own 308 report. I never agreed with it, and said so.

Mr. KINDT: Also, it has been said they did most of the writing of the treaty and tamped in the legal aspect.

Mr. McNAUGHTON: I cannot give you evidence on that first hand, but I would say that the evidence of that is before you.

Mr. KINDT: Yes. In other words, every aspect of the treaty has come from the United States army engineers, and the people who worked on the watershed development program for the Columbia in the United States.

Mr. FLEMING (*Okanagan-Revelstoke*): May I ask a supplementary question? Is this going to be just an assertion, or will we have some evidence to prove it?

Mr. KINDT: That has been brought out in the discussion.

Mr. McNAUGHTON: I would think so.

The CHAIRMAN: The general agrees.

Mr. KINDT: Yes. I am trying to summarize here and be brief. In other words, you have stated the United States is in full control—

Mr. BYRNE: On a point of order; with great respect to Dr. Kindt, the question of summarizing the evidence should come in when the committee is in camera.

Mr. KINDT: I am just about through. I would hope that my hon. friend who joins me in the constituency on the west, and for whom I have the greatest admiration, might let me continue.

Mr. BYRNE: The admiration is mutual.

Mr. KINDT: In other words, the United States is in full control under the treaty, and the signing of the treaty is denying ourselves of the advantage of developing our own economics. That is one of the points which is brought out in your evidence. Would you mind elaborating on that just a little, or agree or disagree?

The CHAIRMAN: Do you agree, General McNaughton?

Mr. McNAUGHTON: Yes, I agree.

Mr. KINDT: You agree to that. That has been brought out in your evidence.

The CHAIRMAN: Mr. Kindt, have you completed your questioning?

Mr. KINDT: I think so. I have a number of other questions, Mr. Chairman, which I can bring out as supplementaries. I do not wish to take up too much time, so I think I will rest my case.

My purpose in speaking on this subject was to bring out all of the factors so that we will have them on the table. If anyone else has any factors, I think they should get them related. I believe it is the duty of all members of the committee to banish from their minds the thought of political bias, and everything else. We are Canadians first, and we should look at this thing to see whether it is in the best interests of Canada. If this thing fails—and I am not saying how I will vote on it—we have to compromise; you always have to go for a political compromise. Perhaps that already has been done. I do not need to stress that point. However, I do think we want to bring out the evidence before the committee and have it properly related. We have only scratched the surface on it, Mr. Chairman.

Mr. HERRIDGE: Hear, hear.

Mr. KINDT: This type of a project is so complicated that you can work on it for four years and still not understand it. How can you expect a committee which never has been exposed to it before, to see the interrelationship of so vast a project?

The CHAIRMAN: Would you agree?

Mr. McNAUGHTON: Yes.

The CHAIRMAN: Thank you.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I see Mr. Stewart has arrived.

The CHAIRMAN: He defers in your favour.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am honoured.

The CHAIRMAN: We have called on everybody in this committee. We have so many Ph.D.'s, and other qualifications, among the members of the committee that I have avoided using the designation. I hope that these members such as Dr. Willoughby, Dr. Davis, Dr. Kindt, and others, will understand.

Mr. STEWART: Mr. Chairman, I wanted to ask only one question but I had understood I had given my place to Dr. Kindt.

Mr. PUGH: He also wanted to ask only one question.

Mr. STEWART: General McNaughton, I would like to draw your attention to page 111 of the green book and article I of the protocol. I would like to draw your attention particularly to the last clause in subparagraph (2), where it reads:

—but in no event shall Canada be required to provide any greater degree of flood control under article IV (3) of the treaty than that provided for under article IV (2) of the treaty.

That refers back to the previous subsection in which we have a definition referring to 600,000 cubic feet per second at the Dalles.

General McNaughton, how do you interpret that legal language?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Did you say "interpret"?

Mr. STEWART: Yes.

Mr. McNAUGHTON: I will be glad to answer that question, Dr. Stewart.

The critical words are "provided for under article IV (2)" of the treaty. Is that not correct?

Mr. STEWART: Yes.

Mr. McNAUGHTON: Paragraph (2) in essence consists of two parts, (a) and (b), both of which are involved.

(a) calls for the operation of the 8.45 million acre feet of storage and, in addition to that, article (b) provides for any additional facilities in the basin and the result of the use of the words "article IV (2)" means that all existing storage in Canada is at the disposal of the United States for this purpose. That means the whole of the storage. For example, in respect of Mica creek any existing storage in the basin is under United States control; there is no limit any more than there was in the treaty beforehand.

The trouble with this is not only the storage called for but the fact that it is made available to an objective defined as "adequately controlled", which is completely flexible in the views of the United States.

Mr. STEWART: The general has concentrated on the original article IV of the treaty.

I wonder if the general now would direct his attention to subsection (1) of section 1 of the protocol, particularly the first part, where it reads:

Unless otherwise agreed by the permanent engineering board, the need to use Canadian flood control facilities under article IV (2) (b) of the treaty shall be considered to have arisen only in the case of potential floods which could result in a peak discharge in excess of 600,000 cubic feet per second at the Dalles.

I wonder if the general would view that as modifying or clarifying the terms of the original article IV.

Mr. McNAUGHTON: I would be glad to do that, Dr. Stewart.

You have read the beginning of that article. The sentence that you have read defines the magnitude of a flood in the United States when the United States is under authority to call on Canada to supplement. Now, there is nothing in that first part which says that when they call on us it is against the magnitude of the flood that their right to call on us develops. But, there is nothing in that paragraph which says they have to use that storage before they use ours.

Mr. STEWART: Then you dismiss entirely these words:

—assuming the use of all related storage in the United States of America existing and under construction in January 1961.

Mr. McNAUGHTON: Dr. Stewart, that means that the flood control condition which has been forecast exceeds the possibility of the United States in dealing with it. To make it safe the article should go on to say: after all the existing storage of the United States has been committed, then the Canadian storage can be committed.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): General McNaughton, have you before you the brief from the Montreal Engineering Company?

Mr. McNAUGHTON: Yes.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Would you turn to page 15 and read the paragraph starting with the words: "the greater use of Mica creek storage". I wonder if you would comment on the suggestion that the greater use of Mica creek storage for flood control as envisaged in sequence IXa would deprive that reservoir of some of the flexibility of power operation that it would possess under the treaty.

Mr. McNAUGHTON: Would you like me to comment on that?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Yes, if you would.

Mr. McNAUGHTON: Sequence IXa and the proposals which I have made bring in the flood control commitments as one of the most important basic factors, and I have proposed that our flood control should be limited to 5.15 million acre feet for operation in the normal circumstances in the interests of the United States; and if Libby dam is eliminated Canada should take over the responsibility for the addition of 1.35 million acre feet presently allocated to the primary role in Libby, and altogether that would make a storage draw-down, except in emergencies, of $6\frac{1}{2}$ million acre feet to create that large storage space in the country.

In working through many routings I think it has become evident that as long as the evacuation for flood control is of the same order of magnitude as the average annual release you do not get into very much trouble with restriction on the power output because you have plenty of flexibility. Under these circumstances of article IX, I submit that the storages in the east Kootenays above Mica are available to replenish Mica, to keep the head up, and to supply about 5.8 million acre feet of flow in addition to the natural run of the river. With these storages and with the limitation on primary flood control we have all the flexibility we need within reason.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Will you turn now to page 23 of the brief, which to some extent deals with the question Dr. Stewart asked. I would like to comment on this rather significant second sentence, which reads:

Only after the generating equipment is added at Mica creek is there the possibility of a conflict between Canadian and United States' interests in the operation of these storages.

Would one assume from that the installation of generating equipment at Mica creek might be quite an obstacle in the continuance of good relations with the United States?

Mr. McNAUGHTON: Mr. Chairman, I fully agree with the statement which was made in the Montreal Engineering report, that within the limits that I have mentioned and until we install generating equipment at Mica—and this is the view that has been taken by the negotiators I think on my own recommendation—we should do everything we can to help United States so long as it does not hurt ourselves. That provision appears in annex A, paragraph 6. However, when you reach the provisions contained in annex A paragraph 7, which deal with the situation after the generating equipment is installed at the Mica development, you must have these restrictions of which I spoke. At that time there is a possibility of conflict.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): At the conclusion of Mr. Sexton's presentation he produced a profile of the Rocky mountain area and brought certain scorn on the idea that there was any practicability in bringing water from the Columbia into the South Saskatchewan.

Mr. BYRNE: Mr. Chairman, that question has been answered.

The CHAIRMAN: We do not want to cut anyone short.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Sexton cited the fact that about 85 per cent of the power would be used in the operation and there would be nothing left. Would you comment on that statement? Is this 85 per cent power project designed to move water an unreasonable concept?

Mr. McNAUGHTON: Mr. Cameron, I think I have already given a very specific answer to that question. On the basis of the Cass-Beggs report this possibility was looked at from all angles and was felt to be a sufficiently valid possibility to be a lifesaver to the South Saskatchewan basin under certain conditions. That being so I do not believe that we should part with that right.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Thank you. Do you consider this feasible from an engineering point of view?

Mr. McNAUGHTON: The engineers who have studied this possibility have said it is feasible, although this was, of course, only a preliminary study. There is no doubt that before this was practically implemented a great deal more work would have to be done. Looking at the situation generally, it seems to me there is nothing insuperable.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Thank you.

Mr. PUGH: Mr. Chairman, I should like to ask several questions in respect of the \$7 per acre foot figure. Does that relate to water delivered into the Old Man river through the Crowsnest pass?

Mr. McNAUGHTON: Mr. Chairman, I do not have the reports here in detail to refresh my mind.

Mr. BYRNE: Mr. Chairman, that was related to the Kicking Horse pass, I believe.

Mr. McNAUGHTON: The water would run from the Columbia to a point and then by gravity to the South Saskatchewan. Where that point is I am afraid I cannot tell you.

Mr. PUGH: You were considering this project for consumptive use on the prairies rather than for power?

Mr. McNAUGHTON: Mr. Chairman, as I understand the figures which were worked out by Mr. Cass-Beggs, or before him by Crippen, Wright as has been stated, they related to a multipurpose development which involves power but is primarily for the purpose of supplying water for consumptive use.

Mr. PUGH: Yes.

Mr. McNAUGHTON: You cannot dissociate in any practical exercise the power for pumping and the recovery of power generation from any proposition of this sort. Mr. Martin has said that if a diversion is a bona fide diversion for consumptive purposes then the development of power does not matter. I say that the limiting factor is not the theoretical or legalistic limitation, but that in respect of these desirable diversions if we do not build the storages when the opportunity to build them is present there will be no use worrying about them because the physical limitations will block us.

Mr. PUGH: You feel that under the treaty we are losing our right to develop these storages higher up river?

Mr. McNAUGHTON: I do, yes.

Mr. PUGH: Mr. Chairman, I should like to refer to one other point and perhaps I will be allowed to lay the groundwork for my question.

General McNaughton for a long time and, in fact, from the beginning has been a rather important figure in respect of the whole development of the Columbia river. I take it, general, that you have been behind the Canada plan and the first opposition to that plan came from the government of the province of British Columbia which stated that the Windermere valley could not be flooded; is that so?

Mr. McNAUGHTON: I may have been very naive, Mr. Chairman, but when the negotiations were set up it was my conviction that this plan had been accepted.

Mr. PUGH: You are referring to the Canada plan?

Mr. McNAUGHTON: Yes, or an equivalent to it.

Mr. PUGH: Would you indicate what occurred following that objection?

Mr. McNAUGHTON: During our negotiations a bomb-shell fell in the midst of us.

Mr. PUGH: When did that happen?

Mr. McNAUGHTON: This happened in about mid 1960, at which time the basis of the plan was cut to very small dimensions by the indication reaching the committee that there would be no upstream storage in the east Kootenay. That ended the practicability of the scheme if it was accepted.

Mr. CHATTERTON: Who dropped the bomb-shell?

Mr. PUGH: This was at the insistence of the province of British Columbia; is that right?

Mr. McNAUGHTON: There is no question at all who dropped the bomb-shell. I call it a bomb-shell, and the indication which reached the individuals concerned with this project came from the province of British Columbia.

Mr. PUGH: At this stage another or alternative plan had to be found if the development was to take place; is that right?

Mr. McNAUGHTON: If the plan was to be developed alternative plans had to be considered.

Mr. PUGH: Did you work on the alternate plan?

Mr. McNAUGHTON: I worked on that plan to a very considerable extent. I was included in the discussions in respect of the plan that had been worked out for comparison, and the treaty plan is really a partial development of sequence VII.

Mr. PUGH: During the time you were connected with the Columbia river development treaty you worked as an adviser in your capacity as chairman of the International Joint Commission and you worked as an adviser to the negotiating committee which comprised certain people from Canada and British Columbia?

Mr. McNAUGHTON: Actually, Mr. Pugh, I had a quite varied position in this connection. I was a member of the Canada-British Columbia policy liaison committee, which it was called. I was constantly being called before the responsible Canadian cabinet committee in respect of this subject to present views and information which I had developed and received through one channel or another. Those are the positions I had. I was also the chairman of the Canadian section of the International Joint Commission with the responsibility we had been given by special instruction of the two governments to develop the principles.

Mr. PUGH: Prior to the treaty being placed before the cabinet in 1960 or 1961, I am advised that the negotiating committee and advisers did meet and at that time made a statement to the effect that you would not recommend the treaty but you would not oppose it. Is that in essence a correct statement?

Mr. McNAUGHTON: I think you are referring to a meeting of the Canadian policy liaison committee.

Mr. PUGH: Yes.

Mr. McNAUGHTON: A committee of which Mr. Fulton was chairman.

Mr. PUGH: That is correct.

Mr. McNAUGHTON: Mr. Fulton asked each person in turn whether he would join in the recommendation to the cabinet of this 1961 treaty. I told him that I was not prepared to make a recommendation on the subject. I think the only way to obtain the correct wording would be to get this cabinet document and look at the way in which it is recorded. I cannot at this late date remember just how it was worded.

There is another cabinet document which bears on this, fortunately; it is the record of the meeting of the members of the cabinet which took place a few days later. I do not think I am at liberty to disclose anything about that.

The CHAIRMAN: I do not want to interject, but I do think we are all conscious of the limitations imposed on privy councillors, the witness included, in respect of cabinet matters.

Mr. PUGH: I am not interested in the cabinet report; I am interested in the meeting of advisers.

Mr. McNAUGHTON: Those provisions are very important because the real answer I gave to Mr. Fulton was a partial answer in a development. On other occasions I have made my position very very clear.

Mr. LEBOE: Before we leave this point, could someone tell us whether or not the minutes of this meeting—since we are discussing them—are available to the public, or are they contained in a confidential document? I wonder if we could ascertain that.

You are referring now to a certain meeting and to what took place. Can anyone here tell us whether it is a privileged document?

The CHAIRMAN: Mr. Leboe, my understanding is that anything transacted in the cabinet is privileged.

Mr. DAVIS: This is not a cabinet meeting.

Mr. CHATTERTON: To settle the matter may I move that we ask for the production of the minutes of that final meeting of the British Columbia policy committee; that is, the record of the meeting which we are now discussing. I move that we obtain the record of the minutes of this meeting.

Mr. WILLOUGHBY: I would like to second the motion.

Mr. HERRIDGE: May I move an amendment?

I move that, if possible, the minutes of the cabinet meeting be produced, a meeting to which General McNaughton has referred.

Mr. KINDT: No.

The CHAIRMAN: Is there a seconder for Mr. Herridge's amendment?

Mr. CHATTERTON: I think that should be a separate motion.

The CHAIRMAN: It has been moved in the form of an amendment. Perhaps I am incorrect, but my suggestion is that it should be dealt with as an amendment. Is there a seconder for that amendment?

There appears to be no one who wishes to second Mr. Herridge's amendment. I therefore declare it out of order.

Will all those in favour of the original motion please raise their hands. Those against?

Motion agreed to.

Mr. BYRNE: Should it not first be determined whether the committee has the authority to ask for government documents?

Mr. CHATTERTON: This is the way to find out.

Mr. KINDT: Yes, this is the way to find out.

The CHAIRMAN: If there is any principle which would be offended by such production I am sure we would be so advised. I am sure, of course, that as a responsible committee we will understand any valid and constitutional argument that is presented against production of any documents.

Mr. HERRIDGE: Mr. Chairman, I would like to move a motion to the effect that this committee should ask if it is possible for it to receive the minutes of the cabinet meeting in so far as they relate to this particular point and question.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I would like to second that motion.

The CHAIRMAN: Those in favour? Those against?

Motion negatived.

Mr. PUGH: I have one more question, Mr. Chairman.

General McNaughton, I am sorry you were interrupted because if there are minutes they can be produced. I rather gathered from Mr. Bonner that actual worded minutes were not kept but that a summary was kept. Were you on the mailing list for the summary?

Mr. McNAUGHTON: I was on the mailing list to receive the summary, Mr. Chairman, but Mr. Bonner is probably right because the record of the discussions went through many drafts, over many months in same cases, to get an agreed record. I am not casting any reflection on anyone's veracity or anything else, but as a result of those variations you probably would be unable to recognize the original minutes. They were wonderful for the purpose but they were of no great value as a record. I cannot say what these minutes are; I do not recollect ever having seen any final minutes of that committee, but I would think there would be a record. As a matter of fact, I have no record that I made myself; I have notes that I used to speak on, but I am not allowed to use those any more than I am allowed to quote the cabinet documents, I suppose.

Mr. PUGH: General McNaughton, I have gathered from your evidence that on many counts you are unalterably opposed to the treaty in its present form.

Mr. McNAUGHTON: Yes, sir.

Mr. PUGH: Why did you not speak out against the treaty from 1961 onwards?

Mr. McNAUGHTON: I do not think, Mr. Pugh, that there is anybody in the service of either the government of British Columbia or the federal government of Canada who was intimately concerned with the discussion of the plan of development who was then or is now in any doubt about the position which I have held consistently on the complete importance, based on what we have observed in the United States, of getting the storages as high up as we could in the Canadian watershed. It was a fundamental purpose without which we should not enter into any agreement with anybody. Nobody should be in any doubt about that.

I would think that I may have expressed some pretty considerable anxiety and chagrin, and desire to get the hell out of the business, if I may put it that way, which may have been interpreted in the way you have put it. However, there is no doubt about what my real meaning was. Within the two or three days afterwards I took the occasion when someone questioned me to make it absolutely clear to the ministers with whom I am associated. It was very clear what I was going to try to do when we arrived at this committee to which I have always come with my problems. I would like to say to you that it is the support given to the views which the chairman of the Canadian section of the International Joint Commission has expressed to this committee down the years that has enabled us to get anywhere at all in the maintenance of the rights of Canada in regard to the waters originating in Canada and the proper return to Canada for the use of these resources. Without this committee, nothing was possible. I was hoping to get before you again.

Mr. PUGH: You feel the present treaty kills for all time the whole development at the higher level, the 2,700 feet level?

Mr. McNAUGHTON: Yes, sir, in my judgment and in my opinion, which is the result of anxious thought and the completest possible review of all the engineering facts that have been made available to me down the years, and most careful study, I believe the treaty as it now stands is inimical to the future of Canada in the proper use of our resources. I would prefer to see no development rather than the kind of thing that is put over in this treaty.

The CHAIRMAN: Mr. Cameron and Mr. Byrne have indicated that they have supplementary questions to ask and then Mr. Dinsdale has some questions to ask of General McNaughton.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You have just stated that you would prefer to see no treaty at this time than to see the present one. From your very long experience in your associations and dealings with the United States authorities, do you think that if there were no treaty proceeded with at this time the United States authorities would withdraw altogether from the proceedings and give up any idea of a treaty? Or do you think they would be anxious to have it in some other form?

Mr. McNAUGHTON: That is a rather difficult question for me to answer. I can give an opinion only.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): It is an opinion I want.

The CHAIRMAN: I wonder if it is a fair question?

Mr. WILLOUGHBY: Let us hear the opinion.

Mr. DAVIS: Yes or no.

Mr. McNAUGHTON: The dominating factor in the United States' view was Libby and has been from the earliest days of the first reference, even in the

reference on the Columbia basin given in 1944. It was to obtain from us a positive agreement that Libby might be constructed, and the motivation behind Libby was the army engineers. Their motivation was primarily from a point of view of flood control, as we have mentioned.

Libby is so expensive that in the United States there are strong forces which do not regard Libby as a proper development of the waters of the basin, a development which was excluded from the instruction to the engineering board that the first plans we looked at would be those that made the best use of the waters in the basin. Libby is not in the projects that qualified under that provision. Everyone recognizes that. No less an authority on water than Krutilla puts Libby away down the list and puts it on as a project which should not be included in the face of the alternatives of Bull river and Luxor and so on. I think that is right. But the army engineers are very forceful people and I think it was in gratification of their views that we are in the position we find ourselves in today.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You think it continues to be an insuperable obstacle?

Mr. McNAUGHTON: There you are asking me a question which is very difficult to answer because it is a difficult matter to judge. I do know from the conversations I have had with good friends with whom I have dealt in these matters that there is a feeling that both countries would be a great deal better off if we returned to the plan which, through my insistence, developed in the International Joint Commission as the views held inside the commission, which are recorded in all the discussions that were carried on in the International Joint Commission itself, on the question of what would be the best course of action to follow: I believe there is a strong opinion in the United States that that plan is the kind of plan that ought to be followed.

There is a reason for that. I do not think I should answer hypothetical questions and put my judgment out unless I give a reason. The advantage of that plan was flexibility. It gave a choice of developments fitting in the flood control storages along with developments of outside power, and provision for a half share; and by a half share I mean a half share of the benefits and not the type of half share that appears in article VI. By working out that plan we could do the thing that was most important in a great plan of development; namely, we could fit the actual building of the projects, the installation of power and so on to the load requirements developing in either country. We did not visualize a development which, one way or another, would not be fully used and for which one country or the other would have to pay very considerable amounts of money in the way of interest and carrying charges and all that sort of thing; nor did we visualize the type of plan which would lead to a surplus with which one did not know what to do and which would become dump power. Probably the most damaging feature of any development is one that results in dump power because that destroys one's ordinary marketing, and that is what we have in the treaty as it stands today.

The CHAIRMAN: Gentlemen, if there is clearly a supplementary question to the original question I would ask that it be put to General McNaughton. If it is not clearly supplementary, I will rule it out of order.

Mr. BYRNE: My question is supplementary to the questions being raised.

The CHAIRMAN: The questions or the questioning? I thought the question was specific and clear: what does the general anticipate to be the United States reaction if this scheme is turned down? We have covered a good many other things since then.

Mr. BYRNE: Mr. Pugh's question was: why did General McNaughton not give his views at the time?

The CHAIRMAN: I thought that had been covered.

Mr. BYRNE: My supplementary question is in relation to Mr. Pugh's question, and certainly it will be out of context so I may have to state the situation again briefly.

Mr. Pugh had elicited the information from General McNaughton that he felt it would be almost a national disaster to have this sequence adopted. General McNaughton made reference to the cabinet, and he said he wished to appear before the committee. I now wish to ask General McNaughton whether he is aware that under our constitutional system—that is under the Canadian constitution—once the executive has signed an international agreement there is no responsibility upon them to put the question before a committee of parliament but rather to put it before the House of Commons for ratification.

Mr. PUGH: Mr. Chairman, on a point of order, my question was directed prior to the signing of the treaty.

Mr. BYRNE: That is right. My question was this: does the general realize, or is he aware that once the executives have made a decision, have signed an international treaty, there is no responsibility upon them to put the matter before a parliamentary committee?

The CHAIRMAN: I think in fairness to the general, he has already indicated his very wide qualifications as an engineer, although he did so with all modesty; and he also indicated that he was not a person with juridical qualifications.

Mr. BYRNE: The general has given us quite a number of opinions on legal matters.

Mr. McNAUGHTON: I have not been remiss in answering.

Mr. LEBOE: I think it was mentioned in Mr. Martin's testimony at the early part of these hearings that it was not necessary for the treaty to come before this committee.

Mr. McNAUGHTON: I can say that in the early days of the drafting of this treaty there were many views expressed, and you will find right in the treaty itself, or in the early draft of it, that there was provision made that we should be on terms of equality with the United States regardless of what the strict parliamentary procedure might be as to the signing of the treaty and of the government implementing it. It is true that Canada in the process, incidentally, said that there should be ratification by parliament because our parliament corresponds to the United States Senate.

Mr. BYRNE: No; we are drifting again.

Mr. McNAUGHTON: I do not want to be told what to do. I cannot keep myself in order and let this develop into a brawl between individuals. I am prompt to take instructions and guidance of the Chairman, but not from the floor. If you ask me a question of opinion, I am delighted to give it to you. But please remember that it is you who are asking me, and not I who am putting it forward.

Mr. BREWIN: I think the general was interrupted. I for one would like to hear the completion of his answer. Perhaps if he forgets the point at which he left off, we might have it read back from the record.

Mr. BYRNE: I am asking the general whether he was aware that this treaty was to come before parliament, and whether it was not the responsibility of the cabinet to put this matter before a committee before which the general might appear with other witnesses? There is no question that it must come before parliament for ratification, and before the Senate for ratification, but not before a committee of the Senate. However under our parliamentary system it is not a requirement that it come before a parliamentary committee. There is no question of it not coming before parliament.

Mr. McNAUGHTON: It is my recollection that in a matter of this sort—do not have the details of it here—the past two Canadian governments in turn gave assurance in the most public fashion that this treaty would come before the external affairs committee which had become the recognized forum for discussion of policy questions of this sort.

Mr. BYRNE: On what occasion, or where has it been specifically stated before the signing of the agreement in 1961 that it would come before a parliamentary committee? The only place I have seen this assertion made was in the House of Commons following the signing of the treaty.

Mr. KINDT: I do not think this is a question which the witness should be asked to answer. The witness is not on the stand to answer such questions as this. I think the question is completely out of order.

The CHAIRMAN: I think the general has been very co-operative and helpful.

Mr. HERRIDGE: It has been the practice in Canada ever since the regime of Mackenzie King.

The CHAIRMAN: I think that is a better answer. Now, perhaps we may get to Mr. Dinsdale's question.

Mr. DINSDALE: Before proceeding to a separate line of questioning I would like to ask one genuine supplementary question arising from the question which Mr. Pugh propounded.

Mr. BYRNE: I wonder if Mr. Dinsdale is referring to my question when he speaks of a genuine supplementary question?

The CHAIRMAN: I am sure there was no unfortunate connotation. I wish you could see the benevolent smile that I see.

Mr. DINSDALE: My only reason for using the word "genuine" was that I was afraid you might rule me out of order. Let me assure you there was no personal aspersion intended at all. General McNaughton indicated that he disagreed with any plan within Canada, throughout the course of the negotiations, and this view was made forcefully.

Mr. McNAUGHTON: I am sorry but I cannot hear.

Mr. DINSDALE: You have indicated, sir, that you disagreed with any change in the Canada plan, and that this viewpoint was made known throughout the entire period of the negotiations. This was your statement a moment ago.

Mr. McNAUGHTON: I could not quite accept that as a statement. The essence of the position which I took was this: I put forward on every occasion the importance of a plan that gave us the maximum storage of water consistent with supply. That was the criterion, and that criterion of course leads directly into sequence IXa.

Mr. DINSDALE: So you were willing to consider variations on this general theme.

Mr. McNAUGHTON: Variations of all sorts, yes.

Mr. DINSDALE: Yes. I take it for granted that in considering a complex subject of this kind there were various and different viewpoints placed before the committee and negotiating team during the course of a long period of negotiation. But the point I would like to have clarified is this: at the crucial moment when opinions were coming together, when the mood was to proceed with the treaty, and there was general concurrence, did you put forward any strong objections?

Mr. McNAUGHTON: Mr. Dinsdale, I think that those who were at these various meetings will agree that I lost no opportunity which was vouchsafed to me.

Mr. DINSDALE: But at the moment of decision, when there had been no doubt violent disagreement on plans and procedures and policy—Mr. Pugh referred to the specific occasion when a decision had been reached whether to proceed with the signing of a treaty.

Mr. McNAUGHTON: I put an answer to you in the gravest language possible that when Mr. Fulton pointed his pencil at me—and I can see it yet—and said “are you prepared to join the recommendations of this treaty?” or something of the sort, I said “no”. And I may have expressed some words of annoyance after to the effect of “to hell with the likes of this thing”, or something like that. I do not recollect now, but I do know I was very positive.

I know that immediately after the meeting I took occasion to let people know at that time that I was hoping that this business would get before this committee before any positive action was taken, and I made it very clear that I felt it my duty to Canada to oppose this treaty with the provisions it had in it by every means which were open to me, and I have held to that view consistently ever since. In fact that is what I am doing now, and that is what I propose to do unless and until parliament has taken the responsibility. But it will have had every view placed before it. However, until that time I believe it is my duty, particularly when you ask me here, and particularly in these circumstances, to make known what I really believe about these matters in this particular business. I have had concern with it for some score or more of years. I have had information which very few people have got, and in the light of that information and my contact with it, I believe I am giving you some advice.

Mr. DINSDALE: I have one more point for verification. In reply to Mr. Pugh's question the general indicated that he might have been naive, but he was under the impression that the Canada plan had been put forward by the negotiating team. He made that statement, that he was under the impression that this was the negotiating position of the Canadian team. If this is so, when did the point of emphasis change on the part of the Canadian negotiating team?

Mr. McNAUGHTON: When the government of British Columbia made the announcement out of the blue that upstream storage in the Kootenays would not be accepted, but I cannot give you the date of it.

Mr. DINSDALE: I think this is an important point, because there are a number of statements to the effect that the Canada plan never was part of the negotiating terms, and I thought that was cleared up in the statement of General McNaughton.

Now, I would like to pursue the line of questioning I had other than the supplementaries which I asked. The statement was made this morning that we wanted to find out where the bell is placed, or we might use the phrase “for whom the bell tolls”. I think that derives from an old poem to the effect that you never ask for whom the bell tolls because it tolls for thee.

Mr. McNAUGHTON: That is all right with me.

Mr. DINSDALE: I have listened very carefully to the general's evidence. He agrees with this principle of flood control benefits for the United States; there is mutual inter-dependence and responsibility in these matters across the border. I take it that you agree with this point, sir; that is, that we are in this together.

Mr. McNAUGHTON: I have lost the inference, Mr. Dinsdale.

Mr. DINSDALE: You do not fundamentally disagree with the idea of Canada providing storages in such a way that they would assist the United States in flood control measures?

Mr. McNAUGHTON: No, I do not, subject to the safeguards which I have indicated in the various presentations I have made to this committee, and the limitations on amount. I do take the strongest exception to reducing Canada to a state of a storer of water for the United States. I think that would be a very, very serious servitude to place on Canada. I agree with Dr. Kindt that there is reason in all things. To throw the burden of the operation of the storages on Canada to the extent which is contemplated and which will result from this, literally is suicide for Canada, and it reduces it to a primitive country with all that goes with it.

Mr. HERRIDGE: Mr. Chairman—

Mr. DINSDALE: Mr. Chairman—

The VICE-CHAIRMAN: I have been observing what the Chairman has been doing with supplementary questions, and I would like to try out something or a moment; if this does not work, I will revert to the previous procedure. I would like to have Mr. Dinsdale finish, then I will call on Mr. Herridge, then Dr. Davis and Dr. Kindt.

Mr. KINDT: Might I say one word. The views of no member of this committee with regard to the treaty should be stated in print, or otherwise. In my remarks this morning I tried my best to bring out the various angles of the treaty, but I would not want anyone to say I am opposed to the treaty; I would not want it to be printed that I am opposed to it. We have not yet reached the point in this committee of making that decision. What I am trying to do is to get the evidence before this committee. I wanted to make that point clear, which I do not think was entirely clear.

Mr. DINSDALE: For further clarification, it is the amount and the manner of the flood control measures that you are in disagreement on; it is the manner in which these flood control measures are carried out that we are in disagreement upon.

Mr. McNAUGHTON: May I make that more precise before I say yes. I am afraid I am being asked to answer sometimes when I am not quite sure what I have answered, in the state we have been in at the moment. In offering to the United States, in the current period of the treaty, primary flood control as they have requested up to 800,000 cubic feet per second, over an 1894 type of flood at the Dalles, I believe for that purpose we will draw down our storage at their request during the life of the treaty to the extent, if necessary, of 6½ million acre feet of storage, provided we are working on sequence IXa, and not on the treaty plan—that is the plan that does not include Libby.

In other words, I want to see that they get the proper flood control that can come from Dorr, Bull river, Luxor, to protect the sensitive area around Bonners Ferry. When it comes to higher flows either in the period of the treaty or thereafter, subject to the assessment on the basis of meteorological information, the service which is fully developed, and the making available on call of our storages to the extent they exist in respect of these once in a long time shots which are the vitally important matter in flood control, the offer should include in itself a deterrent to abuse, to overuse. That deterrent should be the return to Canada of half the damages prevented, determined after the event.

One hopes, in the course of time, in one way or another, they will develop their own storages as far as possible, and take on that burden of operation. We should not be the people who limit this. We should say, here is what we can do and here is what it is going to cost you. The costs actually would be worked out statistically so as to be fair; but they must make the decision in respect of what they call for. If they have caused a flood because of not calling for enough, they are the people who should bear the blame. When we argue in an engineering way or in any other way, at a time of

anxiety when the greatest flood of all time is forecast, what we are going to do, we are wrong, because we are trying to take on ourselves the responsibility for United States action. They must determine it and they must take the blame if they are wrong; they must decide. I think Mr. Kindt will agree with me on that.

Mr. DINSDALE: I think we must assume the use of storages would be determined by international law concerning boundary waters, and also national law concerning the jurisdictional control of Canada's resources. This being so, I would assume also that legal opinion would have been sought by the negotiating team before any firm decisions were taken in respect of the control of the province of British Columbia over its resources or the control of the government of Canada over boundary waters. Were such legal decisions sought and placed before the negotiating committee?

Mr. McNAUGHTON: Before which committee?

Mr. DINSDALE: The negotiating team.

Mr. McNAUGHTON: I cannot answer that. There were lawyers on the negotiating team.

Mr. DINSDALE: The question which is in dispute here this morning is largely a legal question, whether British Columbia controls her resources or whether the government of Canada has over-all control. This seems to have been dismissed by parliament's dismissal of Bill No. 3, which has been referred to, but I am sure there must be these legal opinions available somewhere which might be helpful to the committee.

Mr. McNAUGHTON: There is very interesting correspondence which Mr. Martin and I have had. I think at the end I have a feeling that he accepted the formula I put in front of him.

The VICE-CHAIRMAN: Mr. Dinsdale, as we are getting into a matter of whether or not certain legal opinions were sought by the committee or whether or not, in fact, they existed, I think I might make the suggestion to the committee that we might try to obtain these, if in fact they do exist, or in the alternative call a witness to find out if they ever were made. But, as General McNaughton said, he did not know of any and, so far as the general's capacity is concerned as a witness, I think it probably should end there.

Mr. DINSDALE: Well, Mr. Chairman, it would be very helpful to have a legal opinion in respect of the jurisdictional problem.

Mr. McNAUGHTON: All I can say is that this was one of the matters that came up for very firm argument during the discussions, interviews and exchange of correspondence which I carried on over a period of some months with the secretary of state, and, so far as I am concerned, the answers in respect of my views are all there.

Mr. HERRIDGE: Mr. Chairman, we have had the general on the witness stand since the committee commenced at 10 o'clock this morning. It is now 12.45 and, in fairness to the general, I think this meeting should adjourn. I think we should give the general a rest for one or two meetings when we will have further questions to put.

I move this committee now adjourn.

The VICE-CHAIRMAN: In that respect, Mr. Herridge, before I ask for a seconder for your motion, I would like to say, as mentioned by Mr. Herridge, that General McNaughton has been here and been under questions for quite a long time. We are not suggesting that General McNaughton should not be called back but we have been sitting for two and three quarter hours now.

This afternoon Mr. Sexton of the Montreal Engineering Company and his advisers will be here. Also with us today is Mr. Simpson, president of H. G. Acres and Company Limited.

Mr. Sexton presented a brief to the committee yesterday and I think it was the intention that the next time he appeared before us questions would be put to him and other officials of the Montreal Engineering Company.

If Mr. Dinsdale has only one or two more brief questions I was going to suggest that we perhaps might accept Mr. Herridge's suggestion and request the general to come back within a few days.

Mr. McNAUGHTON: I am entirely at your disposal, Mr. Chairman. The only time I missed was when I had things to do which I could not avoid; otherwise this has priority.

The VICE-CHAIRMAN: But, as I say, we do have other witnesses who are in a position to appear before us today.

Mr. McNAUGHTON: I can appear any time you like.

The VICE-CHAIRMAN: I think we should proceed in that manner and call the general back on another occasion.

This afternoon at 3.30 p.m. we will have Mr. Sexton and his advisers from the Montreal Engineering Company and this evening at 8 p.m., we will have Mr. Simpson's statement.

Mr. DAVIS: Will the meetings be held in this same room?

The VICE-CHAIRMAN: Yes.

I am just putting that suggestion out to you.

Have you many more questions, Mr. Dinsdale?

Mr. DINSDALE: Mr. Chairman, I think I can postpone some of the questions I was going to ask. However, perhaps I could ask this one question because I am trying to get clarification on this fundamental point, which reverts back to Mr. Pugh's question.

The VICE-CHAIRMAN: If that is agreeable to the other members of the committee we will have Mr. Dinsdale put this question and then we will adjourn until 3.30 this afternoon.

We will invite the general to appear before the committee at a later time, and this will be arranged by the steering committee.

Mr. BREWIN: If Mr. Dinsdale's question is a fundamental one we may have supplementaries to it.

Mr. DINSDALE: General McNaughton, you stated at this final meeting you could not support the treaty. Was the question propounded: would you oppose the treaty? Was this question ever propounded?

Mr. McNAUGHTON: No. There is a change or difference in it with which I am not quite aware. Mr. Fulton asked us who would join in the recommendation, and my answer was no.

Mr. LEBOE: On a point of order, Mr. Chairman, we have asked for certain information with regard to this very point on which these discussions took place, and we have asked for the minutes to be brought to this committee. I think it is unfair to the general to question him on these matters before this evidence is put before us. I would like to protect the general in this regard.

The VICE-CHAIRMAN: I am afraid I could not agree or disagree with that. The general has said that he was not quite certain, that his memory was in question and he could not recall, and I think the same would be true for any of us. The general was not quite sure of the exact details and for that reason the motion was made to produce these minutes, provided there are no reasons, either legal or confidential, not to produce them. Mr. Dinsdale's last question, in effect, was to ask the general if he could recall a certain instance; if he does he should say so and, if he does not recall, he can say so, and then these

minutes you have asked to be produced might answer the question. If the minutes cannot be produced, then on a future visit of the general here more questions along these lines could be put.

Mr. DINSDALE: My question was simply this: in addition to the original statement was there a further question asked by Mr. Fulton as the chairman of the negotiating team in these words: "would you then oppose the treaty?" You do not recall that question ever being asked?

Mr. McNAUGHTON: I do not know what you are driving at.

Mr. DINSDALE: There were two questions asked, the first being: "would you support the treaty?" and you said "no". Then it was asked in a different form: "would you then oppose the treaty?"

Mr. McNAUGHTON: I can say to you, Mr. Dinsdale, with the utmost frankness, I have no recollection of any double questioning of which you speak. After I told him I would not recommend it—and that was a matter before the committee at that time—in answer to the question: "do you join in a recommendation to the cabinet?" I might have said: "No". In respect of the further analysis of it I was so upset that I really do not know what happened.

Mr. DAVIS: Then the statement made by Mr. Fulton in his letter to the *Engineering and Contract Record* dated September, 1962 in this connection is false. Is that correct?

Mr. McNAUGHTON: Well now, Mr. Davis, I think that is unfair to Mr. Fulton. There was a disagreement and what happened is in the record. He may have misinterpreted some of the views I expressed. I do not mind telling you that later on I made it very clear to him I would oppose the treaty with every adequate means available to me under the circumstances.

Mr. DINSDALE: This is true but the point is that at this critical moment of decision—

Mr. McNAUGHTON: Oh, Mr. Dinsdale!

The VICE-CHAIRMAN: Mr. Dinsdale, I am afraid we will have to await the result of these minutes before you put further questions.

The meeting will adjourn until 3.30 this afternoon, when Mr. Sexton will be with us.

THURSDAY, April 23, 1964.

AFTERNOON SITTING

The CHAIRMAN: Gentlemen, I see a quorum.

We will continue this afternoon with our examination of Mr. J. K. Sexton assisted by Mr. M. Wilschut.

The list of names of questioners I have is: Mr. Davis, Mr. Cameron, Mr. Byrne, Mr. Pugh and Mr. Gelber. Is there any reason why I should not continue to follow that list?

All right you are first Mr. Davis.

Mr. DAVIS: Mr. Chairman, I should like to ask Mr. Sexton two very general questions and then several specific questions.

Mr. Sexton, you have studied the treaty plan and have seen various engineering studies that have been completed to date. Is it your impression that the treaty plan and the treaty project, more particularly are sound from a physical and engineering point of view?

Mr. SEXTON: That is my impression, Mr. Davis.

Mr. DAVIS: You have also studied several alternatives, more specifically the alternative which approximates sequence IXa. Do you regard the treaty plan as the most economic of the several alternatives which you have studied?

Mr. SEXTON: We do.

Mr. CHATTERTON: Mr. Chairman, may I ask a supplementary question? Did your company investigate the engineering feasibility of the High Arrow dam?

Mr. SEXTON: Yes, we made a study of the High Arrow dam when we were studying the Columbia river in general in 1957. We were satisfied it was feasible.

Mr. DAVIS: I should like then to continue more particularly in respect of the High Arrow project. I should like to ask a question first in respect of its function.

On page 30 of your brief you make reference to High Arrow and in the first complete paragraph toward the end you state:

It is clearly demonstrated, however, that this reservoir will make it possible to operate the Mica creek storage to meet Canadian load requirements, and at the same time maintain discharges from Arrow lakes for optimum operation within the United States, and that the capacity proposed to be impounded is necessary.

I have the impression, and perhaps you will correct me if it is wrong, that the volume of water passing out of the Arrow lakes is made up partly of water which passes the Mica creek site and partly of water which enters the Columbia after the Mica creek site. I also have the impression that about as much water enters the Columbia after the Mica creek site as that which flows into the Mica creek reservoir. Is this approximately correct, or would you describe how the volumes occur going down the main stem of the Columbia, and what the situation is in the Mica reservoir and Arrow lakes?

Mr. SEXTON: There is less water entering below the Mica creek site. To give you a specific answer, Mr. Davis, I would have to refer to our tabulations. The 30 year annual average out of Arrow lakes is 38,949 cubic feet per second, whereas the 30 year annual average streamflow at Mica creek is 20,135 cfs.

Mr. DAVIS: So that it is possible to regulate and utilize something of the order of 20,900 cubic feet per second at the Mica creek site?

Mr. SEXTON: The inflow is 20,135 cfs.

Mr. DAVIS: The difference must obviously arise as a result of the creeks and streams entering below the Mica creek site?

Mr. SEXTON: Yes.

Mr. DAVIS: The difference is of the order of 18,000 cfs, arising below the Mica site?

Mr. SEXTON: Yes.

Mr. DAVIS: This is not controlled by Mica?

Mr. SEXTON: That is right.

Mr. DAVIS: I gather the function of the Downie creek and Revelstoke canyon sites will not be regulatory?

Mr. SEXTON: No, they are primarily power producers.

Mr. DAVIS: If there were no Arrow lakes dam, or no facilities of the nature of the Arrow lakes dam in that area, then approximately half of the flow of Mica creek would remain unregulated?

Mr. SEXTON: That is correct.

Mr. DAVIS: One of the principal functions of the Arrow lakes storage is to look after something less, but only to a minor extent, than half the flow at Mica creek?

Mr. SEXTON: That is right.

Mr. DAVIS: I should like to ask a question or two in respect of the foundation conditions for the dam at Arrow lakes. This situation has been put in the form of questions by various people, not necessarily experts, but people who do know a good deal about the situation. There has been some question about security in regard to a dam at this location.

Mr. SEXTON: Foundation conditions at the outlet of the Arrow lakes are unusual as are the foundation conditions in much of the Columbia below, in that during preglacial time the river bed was eroded to a great depth, almost down to present day sea level and then it was back filled with gravel and other assorted materials. I believe at Arrow lakes there is a depth of something like 1,200 feet of unconsolidated material under part of the river. This, however, does not present an insuperable problem by any means. Many of today's larger dams are constructed on unconsolidated material. I suppose the most outstanding example at the present time is the high Aswan dam which would be on a sand foundation.

Mr. DAVIS: The primary function of the Mica creek site in the future is an on site production, as I understand it. Does the distance of the reservoir at Arrow lakes ensure that there will be a substantial and continuing on site capacity at the Mica creek site?

Mr. SEXTON: Yes.

Mr. DAVIS: Would you describe the way in which the Arrow lakes site ensures maximum on site production at the Mica creek site?

Mr. SEXTON: Yes, Mr. Davis. As I mentioned in our presentation there is a conflict in the way Canada will wish to discharge its water from the Mica creek site as compared with the way the United States authorities will wish to receive it downstream. The United States authorities may wish to receive most of the Mica creek water early in the winter season, whereas we will wish to distribute the storages more or less uniformly over the winter. We have checked this situation carefully. We have checked it not only for a normal year or a year that one would expect to occur 13 or 14 times out of 15, but we have also checked it for the unusual years. In the normal years we find that Arrow lakes is adequate to re-regulate the discharge of Mica creek to permit the water to flow over the boundary as required, or as we expect it will be required by the United States authorities. In the critical years, as I explained, there will be an occasional month of deficit flow and an occasional month of excess flow. These deficits and excesses, however, are all of a minor character. We find they can be made up from Libby and the resultant loss of generation in the United States we find is of the order of one to two megawatts continuously.

Mr. DAVIS: Yes. Will Arrow lakes then serve the function of safeguarding the Mica creek project as an on site producer? How frequent would these critical years occur? How often would on site production at the Mica creek project have to be modified in the interests of fulfilling commitments of storage to the United States?

Mr. SEXTON: We have assumed that we would not modify the on site production at Mica creek and that we can come so close to re-regulating it at Arrow lakes that it would pay to assume whatever losses occur in the United States. This situation during the 30 year period of record occurs twice.

Mr. DAVIS: So on the basis of record it would occur once every 15 years and there might be some diminution of on site potential at Mica creek?

Mr. SEXTON: There might be a very small diminution, Mr. Davis.

Mr. PUGH: I believe in your evidence yesterday you said the penalty to Canada would have only occurred once or twice and it would be hardly worthy of note; is that right?

Mr. SEXTON: That is correct, Mr. Pugh. One to two megawatts amounts to about one quarter of one per cent and is getting beyond the accuracy of the computations we have been making.

Mr. DAVIS: Would this same conclusion apply at Downie creek and Revelstoke canyon?

Mr. SEXTON: Yes.

Mr. DAVIS: They similarly are protected by the existence of the Arrow lakes reservoir?

Mr. SEXTON: That is right. We consider Downie creek and Revelstoke canyon merely as an extension one might say of the Mica creek operation.

Mr. DAVIS: Yes. There has been considerable concern about what might be termed aesthetic and other values in the areas to be flooded either at Arrow lakes, in the case of the treaty project, or in the mountain trench in respect of sequence IXa. Would you describe in terms of seasonal characteristics the flooding that might occur? When is the High Arrow filled? During what period is it held at maximum elevation? When is it drawn down? What might the size of the area of high Arrow lakes be that is exposed to view? When might the lakes be filled and appear, let us assume, at their best? Can you tell us how that would occur seasonally?

Mr. SEXTON: Probably the best reference I can give you, Mr. Davis, is our appendix XII which shows the situation graphically.

Mr. DAVIS: Yes.

Mr. SEXTON: You will see the chart in the middle of the sheet. This is the typical year, which we expect would be the normal occurrence. You will notice that the Arrow lakes are full at the beginning of July, remain full until the end of August, and then the drawdown starts. The dam is half emptied by about the end of the year, it is completely emptied by about the end of February, and then it remains down until May 1 when the treaty requires flood control storage to be available. On this chart we have been careful to keep it empty until May 1.

Mr. DAVIS: Thinking in terms of the diversion of the upper Kootenay into the upper Columbia at Canal Flats, I think you said it was very economical, or, in other words relatively cheap.

Mr. SEXTON: Simple and economical.

Mr. DAVIS: I understand you have looked at the treaty. Do you believe that this diversion is not only economically feasible but can be carried out as required under the treaty?

Mr. SEXTON: I see no reason why it should not. As a matter of fact, in the program that we devised for following the treaty storages we included the Canal Flats diversion at the end of 20 years.

Mr. DAVIS: To what extent does it divert the upper Kootenay at that point? Does it divert most of the flow of the upper Kootenay at that point?

Mr. SEXTON: There again I would have to check our streamflow records. My impression is that it diverts the greater part because that is the part draining the upper snowfields, but I am afraid we do not appear to have that information readily at hand.

Mr. DAVIS: My impression is that it amounts to about 20 per cent of the flow at the boundary, so it must amount to a substantial proportion of the flow at Canal Flats. Would this diversion increase the power output of Mica creek, Downie creek and Revelstoke canyon assuming they were all built at that time?

Mr. SEXTON: It would.

Mr. DAVIS: I would like to refer to the Libby project. On page 21 you refer to the minimum benefits. At the bottom of page 21 in the last sentence, you state:

Hence it is possible by reference to the results of these studies to evaluate the minimum benefits which would accrue to Canada from the operation of the Libby reservoir.

Are these benefits in your view sufficient for the utility in that area to invest in plants which are capable of producing at least that amount of energy?

Mr. SEXTON: They are indeed because, as our computations show, that increment of power can be obtained at a cost of about 1.9 mills per kilowatt hour, which is indeed economical.

Mr. DAVIS: Is this amount of power there regardless of any subsequent power interchange agreement with the United States or with British Columbia Hydro?

Mr. SEXTON: Let me be clear on the word "subsequent". In part it depends on the interchange which is now coming into effect with the completion of the project.

Mr. DAVIS: So it is partly dependent on an interchange which is now envisaged in the sense of an investment now being made, but not on some further and perhaps more comprehensive interchange?

Mr. SEXTON: Not with the United States.

Mr. PUGH: Might I interrupt? Does 1.9 include Duncan?

Mr. SEXTON: The 1.9 referred to the Libby benefits alone, Mr. Pugh.

Mr. PUGH: Not including Duncan lake?

Mr. SEXTON: No. This was a computation we made confined to the Libby benefits.

Mr. CHATTERTON: That is \$208,000, not the \$59,000?

Mr. SEXTON: That is right.

Mr. DAVIS: Yesterday I was asking for one or two totals and my main purpose was to compare the total capital investment in Canada. I would like a comparison of the capital costs of the treaty plan on the one hand and the alternative plan on the other. Are they comparable?

Mr. SEXTON: They are very close. I should explain that the figures we give you may not be strictly comparable to those given by other witnesses because our alternative plan is the one we have devised and which we believe most economically fits the Dorr-Bull river-Luxor alternative.

Mr. DAVIS: I understand it leaves out Duncan lake?

Mr. SEXTON: Yes. The total investment of the plan we have under the treaty is \$122,800,000. The total under the alternative is \$157,200,000.

Mr. DAVIS: I have two other questions, one is general. It relates to the production of what is known in the industry as peaking power. A number of people have claimed that the United States is going to pick up incidentally, as a result of this treaty arrangement, an opportunity to produce peaking power in the United States. These benefits are not divided under the treaty and half of them are not returned to Canada. I merely wanted to explore the physical arrangements. Is it possible, by manipulating the Canadian storages, to make peaking power in the United States, or are the distances too great between the storages and the generating plants in the United States?

Mr. SEXTON: The downstream benefits are divided into two parts: Capacity benefits which are peaking benefits, and energy benefits. Those, I believe, have been evaluated in terms of sale.

Mr. DAVIS: Some people have described those capacity and energy benefits as firm power, using the words rather loosely. They have implied that there are other values available downstream as a result of Canadian storage which are not covered by formulae annexed to the treaty. Can you conceive of any such benefits? I am not suggesting that they exist but I am wondering whether you can conceive of them?

Mr. SEXTON: My partner here has given me a note which I will read to you. Mr. Davis refers to the daily flow pattern moved out by Grand Coulee. Could I ask you to enlarge upon that question, Mr. Davis?

Mr. DAVIS: It has been implied that reservoirs such as Libby, for example, can be used on call from the United States to meet relatively short term requirements in the United States and hence would be operated in a quite erratic fashion in order to meet demands, such as those of Portland and Seattle. Is this conceivable?

Mr. SEXTON: No. The Canadian storages at that distance from the plants and of this magnitude, separated as they are from the downstream plants by the big Grand Coulee reservoir, do not have to be subject to erratic calls. They are subject to planned, seasonal drawdown. That is the way the Canadian storages will be operated. The very fact that right at the head of the main stem in the United States is the big Grand Coulee reservoir obviates the need for any erratic call on Canadian storages.

Mr. RYAN: I have a supplementary question. Would not the Pend d'Oreille river in any event serve that purpose better?

Mr. SEXTON: They do not even need the Pend d'Oreille because they can take the top off their own Grand Coulee reservoir, but indeed the Pend d'Oreille storages are under more direct control.

Mr. DAVIS: Grand Coulee can be used for re-regulation in a somewhat similar fashion to High Arrow so as to meet the day to day or even hour by hour needs of the United States.

Mr. SEXTON: As a matter of fact, you do not even need to use Grand Coulee for day to day requirements. Most of the United States plants have adequate tonnage of that type.

Mr. DAVIS: You do not agree with the claim that Canada is going to perform a so-called peaking function under the treaty?

Mr. SEXTON: No. It is not practical and it is not to be expected that these big storages up in Canada will be called upon to serve daily or even weekly functions in the United States.

Mr. PUGH: Is an interchange not the most effective way to do that?

Mr. SEXTON: Interchange is a very desirable factor.

Mr. DAVIS: But interchange is not necessary under the treaty arrangements.

Mr. SEXTON: No, and it is not needed in order that the United States plants serve their peaking requirements. As a matter of fact, the United States program of development calls for a great increase in the installations of their own plants and this will proceed regardless of whether or not the treaty goes ahead. All the treaty does, as near as I can understand it, is to advance the date or dates of some of these installations in the United States. However, they will use their plants for peaking in this way regardless of whether the Canadian storages become available.

Mr. DAVIS: You have looked at some of these alternative plans in the United States; would you say that the time is now ripe for reaching an agreement with the United States on these storage arrangements, or could we gain in any way by postponing such an agreement? How is the timing of these storages done in relation to conceivable plans in the United States for thermal plants and otherwise?

Mr. SEXTON: It is very desirable to proceed with this agreement with the United States. One has only to examine the nature of the downstream benefits which begin to decline as the United States system grows and they begin to introduce more thermal power, to realize that this asset which we have will decline in value in the United States with the passage of time.

Mr. DAVIS: Thank you very much, Mr. Sexton.

The CHAIRMAN: I thank members for not loading this discussion with supplementaries. We are making good progress.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Sexton, you told us when you began your presentation yesterday that your company had been asked to make a financial comparison between the two systems.

Mr. SEXTON: I think I used the words "compare the two alternatives as business propositions".

The CHAIRMAN: Excuse me, Mr. Cameron. May I interrupt? I have had complaints from members who are sitting in the third row and from some of the secretarial staff that they can hear speakers from the table but they cannot hear members themselves. I wonder if all members would be kind enough to speak a good deal more loudly than they have.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I will, Mr. Chairman. I am wondering, Mr. Sexton, if your company was asked to undertake a complete survey of the two projects, taking into account the national interest and the changing values between power as such and water as such, that is the possibility that in the future water, as a means of producing power, may be more valuable than it is today?

Mr. SEXTON: No, we were not requested to do that.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You told us that your company investigated the High Arrow proposition in 1957. Who were your clients then, Mr. Sexton?

Mr. SEXTON: The Department of Northern Affairs and National Resources.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): As a result of your investigation were you able to recommend the utilization of the site at that time?

Mr. SEXTON: We did. I have forgotten whether our report was in the form of a recommendation or whether it was in the form of placing information before the government. I would have to check on the exact wording, but most certainly we had no reservations on the use of the site.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Can the High Arrow dam be used efficiently for power production?

Mr. SEXTON: No, the High Arrow dam is not a project for at site power development.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Could it effect power production further down, could it add to the capability of producing power at any point?

Mr. SEXTON: Yes, indeed.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): At Murphy creek?

Mr. SEXTON: At Murphy creek and all the way down the main stem of the Columbia.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am speaking of Canada. How much would it contribute in Canada to the increase of power production?

Mr. SEXTON: From Murphy creek? I would have to check the value we assigned to Murphy creek in the two alternatives. My partner tells me we did not evaluate the benefits. We accepted the data as given in the I.C.R.E.B. report and assigned the same value to Murphy in each case.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Speaking on another point, I notice that starting at the bottom of page 21 of your report you outlined the minimum benefits which would accrue to Canada from the operation of the Libby reservoir. You also mentioned the Duncan lake reservoir. I am a little at a loss here. I am not an expert on this but I am wondering how the Libby dam affects the Duncan lake reservoir?

Mr. SEXTON: It does not.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): So the Duncan reservoir has nothing to do with the benefits accruing to Canada from the Libby dam?

Mr. SEXTON: We placed this in here because we were treating the west Kootenay plants as a unit.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Very well I will read it to you. It reads as follows:

Hence it is possible by reference to the results of these studies to evaluate the minimum benefits which will accrue to Canada from the operation of the Libby dam. It can thus be shown that the Duncan lake reservoir will add 59,000 average kilowatts of firm power to the generation of the west Kootenay plants if the fourth unit is added to the Brilliant plant.

I suggest that the implication of that sentence is that Duncan lake is one of the benefits accruing to Canada from the Libby dam.

Mr. SEXTON: Let me assure you that this is a case of misplaced context. I had no intention to imply that Libby was dependant on the use of Duncan.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): It reads that way, and it puzzled me.

Mr. SEXTON: I am sorry. It is a good point, and I am glad you brought it out.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): All right. Duncan was included in the ultimate plan anyway.

Mr. SEXTON: No.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You have it marked here on the alternative development plan, although you have not put the name Duncan lake on this side, and there is a certain discrepancy in the scale, apparently, because they do not look quite the same.

Mr. SEXTON: What appendix is that?

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Appendix I.

Mr. SEXTON: That should not have been shown there. As a matter of fact here is another one also which should not have been shown there, and that is the Arrow lakes. That should not have been shown on the alternative plan. Mr. Wilschut tells me that these were placed there in dotted lines merely to facilitate comparison, but I am inclined to think that they could have been omitted because obviously they have caused some confusion.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Duncan lake reservoir is not included in the alternative plan.

Mr. SEXTON: As we have drawn it up, no.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): As the plan itself is drawn up, or sequence IXa?

Mr. SEXTON: We had never been able to find out what the alternative plan was until it was described here as sequence IXa. The alternative plan as given to us was a plan of development based on the Dorr, Bull river, Luxor alternative. So we devised what we found to be the most economical sequence,

and it just happened that the Duncan lake did not fit into that economy, into the most economic sequence, and we can show an alternative plan to better advantage by omitting it.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Thank you. That is all.

The CHAIRMAN: Now, Mr. Byrne.

Mr. BYRNE: I think Mr. Davis, an expert in these matters, has already asked most of the questions I had in mind. However there are a couple of points I would like to clear up. I was not present at the opening address by Mr. Sexton, so I am not sure just when Montreal Engineering was commissioned to undertake this study. Was it after the protocol had been signed?

Mr. SEXTON: Oh, yes.

Mr. BYRNE: I am not suggesting that Montreal Engineering would undertake this matter on a biased basis at all, but is there any possibility that the public would look upon it as a commission that would be set up in order to bolster the government's position on this question? I am not suggesting that that is so, but does it not naturally follow?

Mr. SEXTON: I would like to believe that our reputation is such that we are not bothered by such a suggestion.

Mr. BYRNE: That is it exactly.

Mr. GELBER: How could Montreal Engineering have examined a specific scheme unless the specific scheme had been put down and the protocol complete?

Mr. SEXTON: That of course was the position presented to us.

Mr. BYRNE: I am not suggesting that was so, but I think the question probably will arise in the discussion, and I thought I would like to have a statement from you in that respect.

Mr. SEXTON: We are rather proud of our reputation in this situation. We have been working for both the British Columbia authorities and the federal authorities. We have worked for the federal authorities since 1957 and for the British Columbia people since the latter part of 1960, and we like to think that we have retained the complete confidence of both.

Mr. BYRNE: I do not have any suggestion that would be contrary to the fact.

Mr. DAVIS: Would it not be correct to say that many other contractors and agencies have also worked on this?

Mr. SEXTON: Very many.

Mr. BYRNE: The question of the safety of the Arrow lakes site has been foremost in the discussions of those who oppose the plan, and you have said of course that it is not an unusual type of construction. Could you tell the committee what special techniques are adopted in respect of this type of structure which would assure safety?

Mr. SEXTON: It should not be said that it is not unusual. It is a special case at Arrow because the scheme that we had in 1957 called for construction of a dam across the river without "unwatering" it, and it called for the deposition of the various components of rock, and for an earth filled dam under the water. Part of the dam of course would be of rock. There is a spur of rock on the north shore on which the fundamental control structures, the concrete control structures would rest. The remainder of the dam, the southern part, will be of rock, or a combined rock and earth filled dam. I would say that while it is unusual, it has been done before. As a matter of fact a similar type of dam was built at The Dalles downstream in the United States, and the fact that it rests on 1,200 feet of unconsolidated material need cause no concern. Properly designed dams do not have to rest upon rock. As a matter

of fact probably the largest concrete power installation, or the largest power installation involving a concrete dam rests entirely on sand, and I refer to the Volga dam in Russia. I have every confidence that this structure will be carried out properly.

In the first place, the British Columbia Hydro and Power Authority with which I am intimately acquainted is a highly reputable organization. I am also closely acquainted with the personnel of the licensing body in British Columbia, and I know that they do examine all such projects carefully. I have had to submit projects before them. Moreover, I am personally acquainted with some of the leading engineers and consultants who are designing this dam, and I have every confidence that they are first class men. I have no doubt about the structure at all.

Mr. BYRNE: You seem to have some knowledge of the Aswan dam in Egypt. Is this gained from personal knowledge?

Mr. SEXTON: It is gained from technical publications.

Mr. BYRNE: You say from technical publications. Is it a concrete dam?

Mr. SEXTON: No, it is an earth dam.

Mr. BYRNE: Have you any information as to the comparison between the flood plan on the Columbia and the Aswan in the event of the dam bursting and causing dislocation with possible loss of life?

Mr. SEXTON: I really do not; and of course the thought of a dam bursting is one that we simply do not entertain.

Mr. BYRNE: You mean it does not enter into your thinking at all?

Mr. SEXTON: So far as the Arrow lakes system is concerned, no.

Mr. BYRNE: But apparently it does enter the minds of others who appear to be highly qualified. I mean other witnesses that we have had.

Mr. SEXTON: No; I am satisfied that this is a responsible and reputable undertaking.

Mr. BYRNE: I think that people are certainly concerned about this, because there has been some considerable publicity.

Could you tell me, Mr. Sexton, in what measure the diversion at Canal Flats would affect the efficiency and economics of the Libby dam in the event we carried out this diversion in 20 years?

Mr. SEXTON: Well, it would remove about 2,100 continuous cubic feet per second from the Libby supply. I think we can compute what that will amount to.

Mr. BYRNE: Is there no probability that there will be spill from time to time, or do we expect to fill the reservoir each year without having any surplus water?

Mr. SEXTON: I could not answer that without actually checking the computer sheets for the Libby operation. Perhaps I can get that information for you. Mr. Wilschut tells me there is an average loss of power from the spill through Libby and Kootenay falls of 68 megawatts; that is the equivalent of 2,000 cubic feet per second, which is identical to what would be diverted from Canal Flats.

Mr. BYRNE: In that event it is conceivable, then, that there would be no real loss of power on the lower Kootenay as a result of the diversion at a later date, if the Canal plant is proceeded with, and the other installation at Brilliant. In the event of diversion in 20 years time these plants would not be materially affected.

Mr. SEXTON: Yes. I would like to check the figure again before I give my final answer. I have to retract all of that. I misinterpreted what Mr. Wilschut

was giving me. We do not know what the spill at Libby is. We would have to get the computer sheets to show what the spill would be.

Mr. BYRNE: It is assumed there is considerable spill, I suppose. Is it not true that in perpetuity we would have reclaimed land in Canada if we are diverting $1\frac{1}{2}$ million, and the total storage is $5\frac{1}{2}$ million. If we are going to divert $1\frac{1}{2}$ million, we would reclaim a certain portion of that.

Mr. SEXTON: I do not think so. The Libby reservoir would continue to function to its full designed supply level; it would not be lowered.

Mr. BYRNE: Then, this diversion is not going to upset any of the economics of Libby or of the lower Kootenay.

Mr. SEXTON: As I mentioned, in having to retract my first statement, we would have to check on what water is actually wasted at Libby before I can say there would be no losses as a result of that diversion of 2,100 cubic feet per second. Frankly, I am inclined to think there would be some loss.

Mr. BYRNE: You have covered the question of firming up 210 megawatts on the lower Kootenay as a result of Libby construction. I wonder if you would enlarge on that in the light of the fact that General McNaughton has said we could discount almost entirely the increase in power production on the lower Kootenay.

Mr. SEXTON: I cannot agree with that statement. As I described yesterday, we have taken the actual operation of the Libby reservoir as the United States authorities conceive it, and have computed the effect of that water going through the west Kootenay plants, and actually arrived at 208,000 megawatts of continuous energy as the increase in output from those plants, provided that the Canal plant is added, and that units are added at Brilliant downstream, to utilize the added water.

Mr. BYRNE: Are you familiar with the operation of the Pend Oreille storage at this time?

Mr. SEXTON: Generally.

Mr. BYRNE: Do you feel there is any comparison between the present operations of the flowage from Pend Oreille system with the flowage that will be anticipated following the construction of the Libby dam.

Mr. SEXTON: The comparison, primarily, is geographic in that the geographical situations are similar.

Mr. BYRNE: I mean in respect of the control of the flowage by the United States entity.

Mr. SEXTON: There is much better control—let us put it another way. There is much less tendency for the United States to fluctuate their flow from the Libby—that is not put very well either.

Mr. BYRNE: Perhaps my question was not put very well, but I think you know what I am driving at.

Mr. SEXTON: There are several factors; one is that there is this big Kootenay lake between Libby and the west Kootenay plants through which the Libby water will be used, and the Kootenay lake is under our control. That is one factor in our favour when comparing with the Pend Oreille, because on the Pend Oreille we have no regulating body of water between the Waneta plant and the United States storages.

Mr. BYRNE: And little generating facility either in the Pend Oreille. Is it not actually dumped very often without producing power?

Mr. SEXTON: I am not familiar with that. I believe they dump their storage primarily for the benefit of the main stream plants; so, what you are saying substantially is correct. The second factor is favour of improved operation at the west Kootenay plants is that the Americans control much less of

the outflow used by the west Kootenay plants than they do in the case of the Waneta plant. I believe the United States controls 93 per cent of the water coming into Waneta; they control some 50 per cent of the water coming towards the west Kootenay, so that is a second factor which reduces the possibility of conflict between Libby and west Kootenay. The third factor is, there are limitations on what the United States authorities can cause in the way of elevation fluctuation on the Kootenay lake, limitations which have been established by the joint commission.

In view of those considerations, we feel the situation at the west Kootenay plants will be vastly superior to that at Waneta.

Mr. BYRNE: That is all, Mr. Chairman.

The CHAIRMAN: Mr. Pugh.

Mr. PUGH: With reference to the control of the flow at Libby itself as it affects the west Kootenay plants on the Columbia river, would a normal run over Libby in each year fit into the Canadian picture? We talk as though the Americans might be using the water behind Libby to the detriment of Canada. Would that be feasible or possible?

Mr. SEXTON: Well, the studies that we made took the water as they say they plan to use it.

Mr. PUGH: In other words, you have the dam at Libby and you have this water right back into the Canadian area of the reservoir, and the time of year they would want to use it would be the time of year we would want to use it for the west Kootenay power plants.

Mr. SEXTON: Yes, indeed. They do not coincide identically but, roughly, they do.

Mr. PUGH: It is not as though they might have some strange use for this water they dam up; they are going to use it part of the time because of no upstream storage.

Mr. SEXTON: Yes. Both the state of Washington and the province of British Columbia suffer from reduced stream flows in the winter time.

Mr. PUGH: At this time I would like to proceed to a principle that has been enunciated several times in respect of the highest elevation at which you can store water; it has been said that the higher you can store it the better. Is that a correct statement in principle?

Mr. SEXTON: Oh yes, because you have just that much more head through which to use that water downstream.

Mr. PUGH: I am trying to compare the Canada plan with the treaty plan. Would it not have been better somehow to work this out in order to get an idea in respect of Dorr-Bull river-Luxor from an engineering point of view? Would that not have been a better plan upon which to work?

Mr. SEXTON: I will go back to your first question first in order to amplify my answer.

From the point of view of use of the water you have you like your storage as high as you can get it in the drainage basin. However, you must not take it so high up you cannot fill it. There is a proper balance with regard to the location of storage.

Now, to come to your question in respect of the Dorr-Bull river-Luxor alternative, the thing that stands out in the economic comparisons of the two programs is the extremely high capital cost of the Bull river-Luxor structures which will come to us early in the program. They result in more expensive power. It is not a case of having a bad program and a good program; you have two programs, the alternative program, as we call it, and the treaty program. They both produce power at attractive rates. But, the rate of expenditures,

the amounts of these expenditures and the amounts of power you get from the two programs are such that the treaty program gives you the better deal. It is a preferable program.

Mr. GELBER: Mr. Chairman, I have a supplementary question.

Mr. PUGH: Now, Mr. Gelber, you hang on; the discussion will still be wide open when I am finished. This is not the answer I am seeking but it is an answer I like to hear. In other words, there is no question in your mind that the treaty is good for Canada.

Mr. SEXTON: The treaty has our unqualified recommendation as the preferable program.

Mr. PUGH: As the preferable program?

Mr. SEXTON: The better program.

Mr. GELBER: Mr. Chairman, I think it is very important that I put a supplementary question at this time. I think you must admit that I have the right to ask a supplementary question, and this privilege is not given to me through the courtesy of the hon. member.

I understood from your first answer that you said the waters should be stored physically as high as possible. Is there not an economic criterion; is it not as high as possible physically, subject to an economic criterion that it be profitable.

Mr. SEXTON: As high as possible up in the watershed where you have water.

Mr. GELBER: And its use must be the most economical use?

Mr. SEXTON: Oh yes. To go high up in the reservoir is very effective, but this is not the criterion if in so doing you encounter much more expensive structures.

Mr. GELBER: Then, there are two criteria?

Mr. SEXTON: Very much so. Dollars are also involved in this situation.

The CHAIRMAN: Would you proceed, Mr. Pugh.

Mr. PUGH: I think Mr. Gelber asked the question I was going to put.

Mr. TURNER: Mr. Chairman, who is supplementary to whom?

Mr. PUGH: In respect of future extensions I asked the general this morning when this whole thing comes into being whether he figured we had lost the rights to do something comparable to the Dorr-Bull river-Luxor deal at a later stage. He felt that we had. Would you care to voice an opinion on that?

Mr. SEXTON: Well, I have mentioned before we do not pose as legal authorities on the interpretation of this.

Mr. PUGH: You would suggest this is a legal opinion?

Mr. SEXTON: No. I just prefaced my remarks that way. Our understanding is that this right exists. We have the right in 20 years to divert Canada Flats and, in 60 years, we have the right to increase that diversion so that the flow across the border boundary does not drop below 2,500 cubic feet per second or the natural flow, and in 80 years to increase the diversion to the ultimate amount whereby the flow across the boundary does not drop below 1,000 cubic feet per second or the natural flow. There is no reason why within the limitations of those requirements for transboundary flows we in due course could not put up the same structures on the Kootenay river.

Mr. PUGH: You have used the term "transboundary flow".

Mr. SEXTON: Yes.

Mr. PUGH: You have used that expression rather than what was expressed before; that is, the user of the water or the increasing use of water in the States, which might have moral connotations in stopping any future development in Canada.

Mr. SEXTON: We find it very difficult to understand any moral claim to the use of water. The treaty is perfectly clear on this matter; it states specifically what you are allowed to divert. We cannot conceive of your not being able to divert what the treaty says you can.

Mr. PUGH: Thank you very much. That is the information I was looking for. In respect of the final phase diversion of the Mica at Canal Flats into the Columbia system, would that not affect Libby tremendously? In other words, you used the term of 2,500 cubic feet per second in respect of the amount of water going down across the border to Libby.

Mr. SEXTON: The first diversion of $1\frac{1}{2}$ million acre feet from Canal Flats in 20 years would decrease Libby's water by 2,100 cubic feet per second.

Mr. PUGH: Would that make it critical?

Mr. SEXTON: I do not think so. Frankly, we had not considered that matter. In our opinion it is irrelevant. The Americans have agreed to it and that is all there is to it.

Mr. PUGH: I am only thinking that if that amount of flow in 20 years time is not sufficient for Libby we might suffer along the west Kootenay dam areas.

Mr. SEXTON: Let me give you what that represents in percentage of Libby use. I give you these figures with a measure of reservation, Mr. Pugh, since they are produced rapidly. Our computations show that the firm energy out of Libby and Kootenay falls combined is of the order of 250 average megawatts. The removal of 2,100 c.f.s. would drop that by 68 megawatts. In other words, we are taking the reduced combined output at 25 per cent.

Mr. PUGH: In any event the United States authorities are quite happy with the situation?

Mr. SEXTON: They appear to be happy.

Mr. PUGH: Mr. Chairman, I should like to ask some questions in respect of a different subject. I refer to the statement that the thought of diverting the Columbia river to the Saskatchewan river for economical generation of power can be dismissed as a practically unrealistic concept, and I notice you use the words "generation of power". Have you made any examination whatever of the water requirements in Saskatchewan, and I do not mean professional examination?

Mr. SEXTON: We have not made a study of the water requirements of Saskatchewan to any greater extent than is indicated in our text.

Mr. PUGH: Does the \$7 per acre foot figure you mentioned this morning have any bearing on this situation?

Mr. SEXTON: Mr. Pugh, I think there is confusion here. With your permission I should like to help clear up this confusion. I think there is confusion between annual costs and capital costs. The \$7.50 per acre foot figure is an annual cost, whereas the figures up in the hundreds of dollars in respect of California are capital costs.

Mr. RYAN: Mr. Chairman, I should like to ask a supplementary question. Are you referring to the figures we were given by General McNaughton?

Mr. SEXTON: Yes.

Mr. RYAN: Those are the figures you are quarrelling with now?

Mr. PUGH: I do not think there is any quarrel.

Mr. SEXTON: I think there has been an inadvertent confusion between annual costs and capital costs. The annual costs which have been estimated for the diversion of water from the Columbia to the prairies vary from a low of \$260 per acre foot to a high of \$374 per acre foot. This figure relates to the moving of water from the Columbia river to the Saskatchewan, or to the prairies. I do not think these figures capitalize the loss of power in Canada however.

Mr. BYRNE: In respect of how many years do these figures apply?

Mr. SEXTON: These figures represent capital costs.

Mr. PUGH: These costs represent capital outlays and would not then include any distribution?

Mr. SEXTON: No.

Mr. PUGH: I am referring to distribution from the flow of water to the locals where the water is to be used.

Mr. SEXTON: These figures represent the capital cost to get the water up, turn it over and let it loose.

Mr. PUGH: From the point of view of irrigation, the whole thing would be completely impractical; is that right? You could not do anything economically with water at that cost; is that right?

Mr. SEXTON: Frankly, I would hesitate to offer my point of view in respect of a purely irrigating purpose for consumptive use. One never can forecast what the future will hold.

Mr. TURNER: Mr. Chairman, I would like to ask a supplementary question. You feel that the potential of the prairies by irrigation will not support the same water cost which may be economical for California?

Mr. SEXTON: No. You are dealing with two distinctly different parts of the world. In one case you have an expanding population and rapidly expanding industry, and a climate that supports year round agriculture. That situation is entirely different from the situation on the prairies. There is a completely different situation there and we really should not be comparing them at all.

Mr. LEBOE: Mr. Chairman, I have a further supplementary question. Does the \$7 figure you mentioned in connection with annual costs include the loss of power that would result by virtue of the diversion?

Mr. SEXTON: I rather doubt whether that figure includes that loss, but I would have to check that before being sure. I do not have the tabulation before me in respect of that \$7 figure.

I do have some figures in respect of annual costs taken from the same report which was referred to by an earlier witness. The cost of taking water to the Athabaska river is calculated to be \$7.30 per year and the average cost of taking the water to the Saskatchewan river is calculated at approximately \$10 per year. I do not think these figures include any allowance for loss of downstream power in Canada.

Mr. LEBOE: That is my understanding.

Mr. SEXTON: I think you are correct.

Mr. BYRNE: I should like to ask a question for clarification. Mr. Sexton has stated that the capital cost is from \$260 per acre foot to \$374 per acre foot. Can you tell me the length of amortization?

Mr. SEXTON: I understand this is an annual cost based on a period of 50 years. I think the capital cost to which we have referred is the actual original cost of getting an acre foot of water moved.

Mr. BYRNE: That cost is related to the first acre foot but there must be some reduced figure. It must relate to a certain number of acre feet over a certain number of years in order to arrive at a capitalization figure.

The CHAIRMAN: We must not lose you, Mr. Pugh.

Mr. PUGH: You will not have a chance to do so, Mr. Chairman.

Mr. SEXTON: These figures are based on a per annum cost for the use of one acre foot of water.

Mr. BYRNE: Do you say that the cost is in the neighbourhood of between \$200 and \$300?

Mr. SEXTON: That is my interpretation. These figures refer to the cost per annum per acre foot. These are capital costs per acre foot moved per year.

Mr. PUGH: The figures relate to per acre feet moved per year?

Mr. SEXTON: Yes.

Mr. PUGH: The costs refer to the moving of water from what point to what point?

Mr. SEXTON: They refer to the transmission of water from the Columbia river up the continental divide and turning it loose on the prairies.

Mr. PUGH: Do these figures contemplate the use of the best crossing on the continental divide?

Mr. SEXTON: I believe I gave you a range of figures.

The lowest figure we have here is one from the Columbia into the Athabaska. The highest one we have is from the Columbia into the South Saskatchewan. However, these figures should be treated with reservation because the quantity of the water is varying also.

Mr. PUGH: In the course of your studies, have you had occasion to make an investigation of prairie water tables?

Mr. SEXTON: No.

Mr. PUGH: To your knowledge, are they lowering?

Mr. SEXTON: I do not know, Mr. Pugh.

Mr. PUGH: In regard to the sources of water for the Bull-Columbia system, there is a story current that the ice-fields are receding. Is that so? If so, what effect would it have on the flow of the Columbia system?

Mr. SEXTON: In our experience not only within this part of the world but also in South America, we have found the ice-fields receding. One can get conflicting stories in technical publications. One can read, for example, that the ice is receding and one can also read another story, that we are entering into a cold age. In the one case where we take a hydroelectric plant right off the toe of a glacier—this plant was built in the early thirties—at the time it was built the intake was right at the toe and now I would say that glacier is three or four hundred feet away.

Mr. PUGH: They may have been using it for drinks!

In the projections for the future over and above the treaty requirements in the plan which you have put forward, what further development have you explored or do you foresee on the Columbia river in the way of power?

Mr. SEXTON: You mean beyond either of these programs?

Mr. PUGH: Yes. May I put it this way to start it off: we have heard that the Columbia river treaty is really only the start of the Columbia system. Is that so?

Mr. SEXTON: The three storages are just the start. The three treaty storages are just the beginning; and then you add your machines at Mica and you

add Downie creek, you add Revelstoke canyon and you add Murphy creek. There are the additions which follow the treaty storages.

Mr. PUGH: Will there be more additions than those you have named just now?

Mr. SEXTON: There might be the addition of power above Mica. We have not studied that. In 1957 in our review of the entire river we had Calamity curve, which of course is now drowned out with the higher Mica, and we also had the Donald and we had the Nicholson site. There are locations up there that might be developed later on. They are relatively small compared with the developments now under consideration, and I would say that they might find it difficult to compete with steam 20 or 30 years from now; we do not know. The technology in the production of power is changing rather rapidly.

Mr. PUGH: So the treaty now uses up pretty well all the power facility on the Columbia and possibly, as far as control over the river is concerned, it is the most adequate that could be done?

Mr. SEXTON: I may be misunderstanding you, Mr. Pugh. The treaty deals only with these three storages, which we are satisfied are good propositions. The subsequent developments are for Canada's account, and that is where you add the power plant.

Mr. PUGH: Have all these various projects been discussed with the International Joint Commission?

Mr. SEXTON: I believe so.

Mr. BREWIN: May I ask a supplementary question?

Mr. Sexton, does it follow from what you were saying that you would agree with General McNaughton that you should look at the whole sequence in order to determine as between two plans rather than taking 30 projects that are proceeded with first and compare them? That is what I understood General McNaughton to say. Do you agree with him?

Mr. SEXTON: I do not know with whom I am agreeing, Mr. Brewin, but that is the way we go about it. We compare the whole story.

Mr. BREWIN: Does your report go into the whole sequence of just the treaty projects by themselves?

Mr. SEXTON: We take the entire sequence and we extend it into Canada's development of its power, both in the program which would logically follow the treaty storages and in a similar program which we feel would logically follow the alternative, the Bull river-Luxor.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I ask a supplementary question?

Mr. Sexton, would you agree with General McNaughton's opinion that rising land costs in Canada would make the Bull-Dorr-Luxor proposition uneconomic unless it is undertaken now?

Mr. SEXTON: No.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You would not agree with that?

Mr. SEXTON: No.

Mr. GELBER: Mr. Sexton, with your experience of Latin America I should really ask you what you think of the Cruzeiro in respect of Canadian power.

Mr. SEXTON: I would not buy Cruzeiros.

Mr. GELBER: It seems to me there are two fundamental ideas at war here and I would like to put them to you.

One idea seems to me to be the conception of the proponents of the treaty that we have an asset here; that we must use the asset now; that we cannot

conserve the asset; and that to some extent it is a wasting asset unless we use it. The other view is that we have an asset; that we should use it and develop it for Canadian use; and that we can conserve the asset for future Canadian development. What is your reaction to that?

Mr. SEXTON: I feel there are two aspects of power development on the Columbia.

If we try to develop the Columbia independently on either plan, either the treaty plan or the Dorr-Bull river-Luxor plan, we will obtain power at considerably higher cost than is contemplated in the present programs. By taking advantage of an arrangement with the United States to sell or create downstream benefits with our storages we enhance the whole picture of Columbia river development. So you have two phases of this. First, you have the creation of storage which creates certain values in the United States and for which you receive compensation, and then you follow with the development of the Canadian Columbia. This initial business transaction with the United States has enabled us or will enable us to develop the Columbia more cheaply than would otherwise be possible.

By virtue of that fact, it is advisable not to delay because downstream benefits do decline in the United States. They have probably their maximum value now.

Mr. GELBER: You feel to that extent this could be a wasting asset?

Mr. SEXTON: Downstream benefits definitely are wasting in the United States.

Mr. GELBER: I would like to ask you one more question.

The other criticism is that Canadian planning should be on a Canadian basis and that the mistake of the planners of the treaty is that they are thinking in terms of the over-all planning of the basin. What is your view of that?

Mr. SEXTON: From the point of view of a power man, the more over-all the better, of course. Your optimum use or your optimum generation of power in the basin will come from the greater degree of collaboration with the United States.

I have not expressed that very well, but my meaning is that co-operative development of our resources is advantageous to both of us.

Mr. GELBER: Thank you very much.

Mr. TURNER: In reply to Mr. Cameron on a supplementary question just a moment ago Mr. Sexton said he did not agree with General McNaughton, who had suggested that while the treaty gives us a right to make maximum diversions at a later date, that was not possible because of increase of land values at that time. Mr. Sexton was asked by Mr. Cameron whether he agreed with that and he said no. He was not given a chance to amplify his statement, and if he would like to do so I would like to give him that chance.

Mr. SEXTON: It is a sound principle in the management of a power utility that you do not spend money in advance of requirements. Money at compound interest multiplies rather rapidly, particularly when you are dealing with 5 per cent. I am afraid that any money you put out now as a hedge against rising land prices would increase much more rapidly at compound interest than would any land values. It is just a sound business principle, as you of course know, Mr. Turner, that you do not spend moneys in advance of requirements.

Mr. TURNER: On page 16 of General McNaughton's brief the serious claim is made that officials of the water resources branch of the Department of Northern Affairs and National Resources criticized the Montreal Engineering

Company for a portion of your 1961 report to the government. I would like to read what the general said:

I recall that Montreal Engineering Company reported to the government of Canada that this service was not necessary in any event. (Letter 1 March, 1963, in reply to letter 20 February, 1963, from J. D. McLeod for T. M. Patterson criticizing the company for providing an opening for a critic by name McNaughton).

Have you any comments to make on that statement?

Mr. SEXTON: We never felt we were being criticized and most certainly this client, the Department of Northern Affairs and National Resources, has given us every liberty to follow our own consciences in this work. As evidence of that, of course, is the fact that we developed a separate concept of how the power might be best transmitted from the west Kootenay region to Vancouver district. It seemed to us at the time—we were thinking in terms of transmission at 345 kv.—that two lines would be needed in any event from Oliver to the coast with suitable sectionalizing and that we might postpone the need for the standby transmission in the United States. We so stated. That is a matter of judgment based on the assumptions we used.

We consider the government is entirely within its rights to develop its own judgment. This was a diversion in judgment.

Mr. TURNER: Before the external affairs committee of 1960 there was a statement by General McNaughton which appears on page 63 of the blue book. The general testified in March, 1960, before the external affairs committee to this effect:

We must not build anything ahead of time; otherwise, with these very large amounts of capital expenditure, the whole economics of the project would be destroyed.

Do you feel that the treaty meets this concern more adequately than would the alternative plan proposed by General McNaughton?

Mr. SEXTON: That is the basic reason why the cost of power comes out more cheaply in the treaty program. Major expenditures are postponed to a greater extent in the treaty plan than in the alternative program.

Mr. TURNER: The other day the general admitted his plan would cost more in the early years, but he said it would be of far greater value in later years, providing peaking power for a combined hydro-thermal system. What, if any, advantage do you see in General McNaughton's plan as far as peaking is concerned?

Mr. SEXTON: I take it General McNaughton was referring to the use of the dam at Luxor, say for generation of peaking power. If in the long term future there should be a need for peaking power there, there is nothing to stop the authority of that time building just such a dam as that; but in the meantime it would be inadvisable to spend money for peaking power up in the east Kootenay.

One of the cardinal principles of capacity for peaking is that one should get it near one's load so that the transmission costs are cut down. The east Kootenay valley is about as far as one can get from the Vancouver load, and moreover, by the time the British Columbia Hydro and Power Authority system develops to the point where it is out looking for peaking capacity, we may well have such changes in technology that it will be far cheaper to provide that by gas turbines in Vancouver. One should not be gambling on heavy investments at the present time in the face of such a situation.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): May I ask a supplementary question?

Mr. Sexton, you refer specifically to Vancouver load. I rather gathered from the general's evidence that he had in mind peaking power to be sold to the United States to be available for their requirements.

Mr. SEXTON: I see; I did not realize that. I would suspect that the situation would still hold. You are still quite a distance away from Spokane.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): He did not mention Spokane; he did not mention any specific place, but I would presume the Spokane area would be one.

Mr. SEXTON: Yes, it is a general rule, Mr. Cameron, that where you advance a hydro plant for peaking you install a great deal more capacity than you would normally install, and you prefer to have that near your load for economic reasons.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): How much nearer is Revelstoke to the series of installations?

Mr. SEXTON: It is not much nearer.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): That is what I thought. There is not very much difference in that. Therefore, if it is valuable in one place it would be almost equally valuable in the other?

Mr. SEXTON: There is a small increment of difference.

Mr. TURNER: Now I turn back to the general principles. You do not feel, then, that this country, Canada, should commit itself now to a higher cost plan to obtain the problematic peaking in the distant future? Is that it?

Mr. SEXTON: That is what I am saying, Mr. Turner. I suppose I should add one qualifying word there. I do not think we are precluded from building the same peaking facilities in either plant.

Mr. TURNER: No, but if you are basing yourself merely on future peaking possibilities—

Mr. SEXTON: One would not spend money now.

Mr. TURNER: No, because you do not know what the future competitive energy sources might be.

Mr. SEXTON: That is so.

Mr. PUGH: May I raise a point of order, Mr. Chairman?

I gathered from the general's testimony that they were putting this furor dam and the Bull river dam in the peak. That might be one of the cutfalls, but building the dam away up there was not just to provide peaking?

Mr. SEXTON: No.

Mr. PUGH: If I understood the question as put, it was to provide peaking only, and your answer was on that point.

The VICE-CHAIRMAN: Just to clarify it, you said that in the general testimony; did you refer to Mr. Sexton or to Mr. McNaughton?

Mr. PUGH: No, the suggestion was made that General McNaughton was not bright in his engineering ideas, and that if you had these dams built at the head of the river the possible advantage was for peaking alone.

Mr. TURNER: My question was related to the general principle the general was advancing, that you ought to allow for the heavy cost now in order to provide for prime peaking possibilities in the future, and my question was relevant to the type of peaking and the problematic possibilities in the future, and that it was not meant for competitive energy sources, and was an unwise course to follow.

Mr. PUGH: I suppose the general will be back one of these days.

Mr. SEXTON: There was no misunderstanding.

Mr. BREWIN: This is the Turner, not the McNaughton theory.

Mr. SEXTON: The alternative plan calls for the building of Luxor as a straight plant to generate power. But I believe in the future it could be converted into peaking. That was my understanding.

Mr. TURNER: General McNaughton, as I understood it, spoke of vested rights being built up in the United States for Canadian water. May I ask you what would the difference be in the generating potential which the United States would install in their system under the McNaughton plan as opposed to the treaty plan?

Mr. SEXTON: The difference would be entirely on the Kootenay river. As I mentioned earlier, my understanding is that the United States has its plans for the extension of these generating facilities on the main stem of the Columbia quite independent of what happens in Canada, and that they will make these installations regardless of which plan we proceed with in Canada. The only change as far as the United States investment is concerned between the two plans would be on the Kootenay river at Libby.

Mr. TURNER: The only difference would be in these installations. Therefore they are vested rights on the Kootenay. Do you as an engineer think that the conditions placed on Libby by the treaty give ample warning to the United States that Canada as an upstream country can exercise its rights of diversion regardless of vested rights?

Mr. SEXTON: Most certainly in my opinion the treaty states clearly that after 20 years we have the right to divert at Canal Flats, and after 60 years we have certain other rights. In my opinion it is clearly stated.

Mr. TURNER: If the only difference is the installation at Kootenay, would there not be so called vested rights under either plan?

Mr. SEXTON: The vested rights are the same on the main stem for either plan.

Mr. TURNER: We are talking about vested rights, whether it be under the treaty or the McNaughton plan, and the same issue arises?

Mr. SEXTON: It is substantially the same.

Mr. BREWIN: Did you not make an exception in respect of Libby and Kootenay? I understood the general to speak about vested rights which did not flow from the installation at Libby. They would not be the same?

Mr. SEXTON: That is a difference.

Mr. BREWIN: It is this \$350,000,000 investment, as I recall it, that would surely in itself cause rather substantial vested interests being built up, would it not?

Mr. BYRNE: They knew that when they signed the agreement.

Mr. SEXTON: You have mentioned the amount of the Libby project, and that is an indication by the United States that they have full knowledge of what diversions they are subject to within 20 or 60 years.

Mr. BREWIN: Do you not see any point at all in General McNaughton's suggestion that even if you have a legal right to exercise something to the great detriment of the other partner, you may show wisdom not to exercise it, and you may in fact, despite your legal right, not wish to do so in a way which would harm the interest of a good neighbour?

Mr. SEXTON: Well, it depends on what you mean by "great detriment of a partner". I think we computed a few minutes ago here that Canada's legal right to divert at Canal Flats would reduce Libby flows by 25 per cent. Frankly, the United States in their financial planning for that project should take that very definitely into account. So far as we are concerned in our

advice to them we can only suggest that they take these treaties at their written word. If we cannot trust the contractual word of our partners, we can only say we are wasting our time.

The VICE-CHAIRMAN: Just a moment. Have you finished, Mr. Turner?

Mr. TURNER: No. I wondered if Mr. Brewin would not like to cross-examine the witness at his own time.

Mr. BREWIN: Oh, I am sorry. I did not have any special time of my own that I knew of. I was just following up the main point.

The VICE-CHAIRMAN: When I mentioned this morning that the Chairman might be using a different method of presiding than I did, I did not mean to suggest that I was trying to be a judge or a Solomon. But I had mentioned the other day that it was my impression that we were getting a rather substantial amount of supplementary questions which sometimes seemed to divert us completely from the person who was questioning the witness. Now, if anyone has a series of questions, would he be kind enough to give me his name and I will see that he is brought on ahead of others.

Mr. BREWIN: I had forgotten that we were under a new regime. Under the old regime we had rather extensive supplementaries.

The VICE-CHAIRMAN: When we get into a long series of supplementaries one sometime forgets where we started from. I shall put your name down, Mr. Brewin. Now, Mr. Turner.

Mr. TURNER: With your permission, and Mr. Brewin's—

Mr. BYRNE: These lawyers!

Mr. TURNER: I would like to ask Mr. Sexton this question now. While General McNaughton has admitted before this committee that his plan would be more expensive initially, he has suggested that his proposed storages are the best ones in the long term interests of Canada. What are your views about this?

Mr. SEXTON: Well, the subject of that program was what occupied us in comparing those two programs, and we made as objective a study of the alternative program and of the treaty program as we could; and the very fact that the alternative programs called for excessive expenditures towards the beginning of the program resulted in our finding that the power was cheaper in the treaty program. Hence we felt it to be the preferable one of the two.

Mr. TURNER: Now, turning to page 20 of the general's brief, he says in the second paragraph:

In consequence it is very necessary that studies should be made available to establish what actually can be achieved for the United States load by High Arrow re-regulation of Mica when Mica is operated for the Canadian load.

It seems evident that these studies will show that this proposal is far short of requirements.

It would seem that your firm carried out these studies. I want to ask you whether you find the treaty plan, to use the words of general McNaughton, to be "far short of requirements"?

Mr. SEXTON: No, I say no, we do not.

Mr. TURNER: Do you think that the Canadian negotiators have adequately protected Canadian flexibility for at site generation?

Mr. SEXTON: We think so.

Mr. LEOBE: Supplementary to that question: would it not then be largely because of the inflow below Mica, that this would be so?

Mr. SEXTON: That must be taken into account, and of course we would take it into account, Mr. Leboe. But the predominant factor was the use of these seven million acre feet at Arrow lakes for re-regulating.

The VICE-CHAIRMAN: May I bring something to the attention of the committee. It is now 5.20 p.m., which leaves us approximately 40 minutes for this subject. Of course, it is up to the committee to sit longer. Normally we would be sitting until six o'clock. I think it is the hope of the committee that we might finish with Mr. Sexton this afternoon, although if necessary we could ask him to return. On my list I have Mr. Turner who now has the floor, then Mr. Ryan, Mr. Herridge, and Mr. Brewin. Are there any other members of the committee who wish to ask questions at the moment?

Mr. BREWIN: You may cross off my name, unless Mr. Turner raises some other matters which require my attention.

Mr. TURNER: On a point of order, I judge whatever success I have had in questioning by Mr. Brewin's reaction.

The VICE-CHAIRMAN: Since we have a limited length of time here, it would be helpful if those who wish to ask questions could give the Chair a rough idea of how long they will be. We could then divide up the time. Are there any others who wish to ask questions of Mr. Sexton?

Mr. TURNER: I will yield to Mr. Ryan.

Mr. RYAN: I will try to confine myself to about ten minutes.

The VICE-CHAIRMAN: Mr. Herridge, can you give us an idea how long you will be?

Mr. HERRIDGE: Five minutes or a little better.

Mr. BREWIN: I have waived my questions.

The VICE-CHAIRMAN: Go ahead, Mr. Ryan.

Mr. RYAN: I would like to ask Mr. Sexton whether he would be qualified in an engineering way to tell us what impervious fill means in the construction of these dams. I asked Dr. Keenleyside and he referred me to an engineer. I may say he stated that fill was handy to all these dam sites, but that impervious fill was needed at the dam sites.

Mr. SEXTON: Let me answer the question by explaining the construction of an earth dam. An earth dam consists primarily of two parts, a pervious part, or a part which is probably pervious, and a part which is impervious or relatively watertight. I say relatively watertight, because it is never droptight. The impervious part normally is placed in the centre or slightly overcentre and the result is that the surface of the water in passing through the earth dam drops very rapidly through the impervious part and any leakage which does emerge through would flow away easily without erosion in the pervious part downstream. I think that is about the best I can do in giving you a definition of impervious.

Mr. RYAN: Could you describe the type of rock or other fill, such as clay?

Mr. SEXTON: Clay is impervious and is an excellent impervious material. In this country of ours we have glacial till which is an excellent mixture of gravel and fine materials and clay and, of course, straight sands and gravels all are pervious materials. As a result we use clay or glacial tills in the central part and sands and gravels and coarse rock in the downstream side.

Mr. RYAN: Thank you. Is it not true, with regard to operation of Canadian storage for flood control under the treaty, that such operation will not reduce our downstream benefits as these are calculated five years in advance and are not subject to any change and, in any event, are now paid for under the sales agreement on a basis of calculation assuming no conflict with flood control operation.

Mr. SEXTON: That is my understanding.

Mr. RYAN: Is it not true that any reduction in downstream power benefits caused by operation for flood control will be a reduction applicable in its entirety against the United States share of benefits?

Mr. SEXTON: That, of course, is one of the virtues of a sale payable in advance.

Mr. RYAN: On page 5 of General McNaughton's brief he states the following:

There is no specified restriction that when expected flows are small these evacuations are to be reduced.

Do you agree with that statement?

Mr. SEXTON: No; I am afraid I do not, because the treaty is rather specific on that point in specifying that a system of meteorological measurements will be introduced. It is described in Annex A in paragraph 2; that is, that the operation of the reservoirs for flood control each year will be based on the results of these hydro-meteorological measurements. That is the national and normal way in which flood control is laid out each year. I would know of no other way in which to control the operation of reservoirs for flood control.

Mr. RYAN: Do you see any serious area of conflict between the United States and Canadian authorities in the determination of this hydro-meteorological system? Is it an area in which there might be conflict?

Mr. SEXTON: No. This is a very straightforward matter including such things as snow surveys. Such surveys are being made now. Then there is the use of such surveys in conjunction with precipitation records and precipitation forecasts. This is not a subject for dissension.

Mr. RYAN: I take it then that it is a firm basis for determination.

Mr. SEXTON: Yes. Now, judgment enters into the picture with relation to the extent of floods which will be caused by certain snow conditions and rainfall expectations, but I would expect such difference of opinion only would be in respect of detail.

Mr. RYAN: On page 17 of the general's brief, he says: "A special operation of the Libby dam may be required in order for Canada to receive 200,000 kilowatts of energy gain." Your report shows an increase benefit of 208,000 kilowatts for Canada. Did you assume a special operation for Canada when you arrived at your figures?

Mr. SEXTON: None whatsoever. We took the United States concept of the operation.

Mr. RYAN: Will this be a firm operation in the future; do you anticipate this, or do you fear it will not be?

Mr. SEXTON: Do you mean the way the storage will be operated?

Mr. RYAN: Is there any reasonable threat to this that you can foresee at the present time?

Mr. SEXTON: I cannot visualize any.

Mr. RYAN: Is this 208,000 kilowatts a gain in dependable or firm energy?

Mr. SEXTON: It is in firm energy. I should point out it is the last 29 megawatts which is dependent on the east-west interconnection in Canada to become firm. This is given in the tabulation on page 22 of our submission. All figures are for firm energy. In the first column of figures under firm energy rating, average kilowatts, we are giving the firm energy capability of the west Kootenay system, and you will notice that the second figure from the bottom is 691,000 average kilowatts. The next figure is 720,000 average kilowatts. The difference of 29,000 average kilowatts is made possible by the

firming of the east-west tie. In respect of the 208,000 you require the east-west transmission tie to firm the last 29,000.

Mr. RYAN: When is it anticipated that that will come into effect?

Mr. SEXTON: We show that in 1977.

I should point out that in the meantime there will be a north-south tie which will be in full use.

Mr. RYAN: That is the main grid.

Mr. SEXTON: That will be between the west Kootenay plants and the Bonneville power authority at Spokane.

Mr. RYAN: Is that the one which is intended to go up and include the Peace river?

Mr. SEXTON: No, this is a different tie.

Mr. RYAN: In arriving at your figure of 208,000, under what water conditions did you reach this conclusion?

Mr. SEXTON: These are firm figures; in other words, they are for minimum water conditions.

Mr. RYAN: I notice with respect to the Kootenay in the States there are three tributaries below Libby dam that appear to rise in Canada. Although I do not know the names of these tributaries they look to be quite substantial ones because they are shown on the map. I suppose the fact these tributaries come in below Libby gives us a lot of bargaining power in the future in respect of the flow into Kootenay lake; in other words, that is the flow that will ultimately get to the west Kootenay plants and, for that reason, perhaps water from the east Kootenay in Canada is not as important as we otherwise might think it would be.

Mr. SEXTON: Actually, I do not think these three streams entering the Kootenay between Libby and Kootenay lake affect the picture very much as we have no control on them.

Mr. RYAN: I have one or two more questions and then I will be finished.

General McNaughton said in his evidence that the maximum diversion plan would produce some 360 megawatts more power than the treaty plan. Do you agree with this statement by the general?

Mr. SEXTON: Well, I can only state, Mr. Ryan, the difference we have found between the two plans. As I mentioned, they are not identical; we found a difference of 1.85 billion kilowatt hours per year, which is 211 continuous megawatts.

Mr. RYAN: That would be about 150 megawatts less.

Mr. SEXTON: Yes, and this is on the system.

Mr. DAVIS: That would make no allowance and provision for any compensation to the United States which might be required in order to make the diversion.

Mr. SEXTON: No; we included that aspect of it.

Mr. RYAN: If the Arrow lakes project was not included in development by Canada and its flood control operation had to be carried out at the Mica dam could you see any conflict at Mica in the operation for this flood control and the operation required for power generation?

Mr. SEXTON: I may say this was one of the things that bothered us in establishing a hypothetical alternative program for comparison with the treaty program because there is a distinct disadvantage in not having the Arrow lakes to re-regulate the discharge of the Mica reservoir. We have made an initial attempt at evaluating what that might be and it looks to us to be any-

where from 100 to 150 megawatts. But, it introduces an uncertainty in the alternative program that bothers us slightly.

Mr. PUGH: Mr. Chairman, may I put a supplementary question along those lines.

Certain experts have said that we should proceed with Mica without High Arrow. Is that at all feasible?

Mr. SEXTON: Oh, that is entirely feasible but you then do not have the advantage of the re-regulation at Arrow for adjustment of discharge into the United States to meet their requirements.

Mr. PUGH: It is not really a practical plan.

Mr. SEXTON: You cannot get the same downstream benefits with High Arrow alone or with Arrow alone discharging into the United States as you can with—

Mr. PUGH: If I may interrupt, I meant proceeding with Mica.

Mr. SEXTON: Oh, I am sorry, that is my mistake. You cannot get the same downstream benefits by proceeding with Mica alone.

Mr. PUGH: The High Arrow is the biggest producer of downstream benefits by far, is it not?

Mr. SEXTON: Yes, it is an excellent one.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): As you pointed out, Mr. Sexton, downstream benefits are a declining asset.

Mr. SEXTON: They do decline.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): And, I think you said they decline quite rapidly.

Mr. SEXTON: At the end of 30 years, no. You arrive at the stage of residual benefits by the year 2010, in accordance with the calculations.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): An extremely temporary advantage.

Mr. SEXTON: Of course, he took a count of that in our computations for both programs.

Mr. HERRIDGE: Mr. Sexton, we have come to some very interesting conclusions in your brief. On whose estimates did you base your calculations? I am referring to the estimates of cost, construction, flowage and so on.

Mr. SEXTON: I think the best answer I can give you, Mr. Herridge, is to actually list where our various estimates came from.

Mr. HERRIDGE: I would be very interested in that because we were unable to get the details of the flowage and so on in respect of the Arrow lakes from the provincial representatives.

Mr. SEXTON: Starting with Duncan lake, this is estimate 201-R2 of the British Columbia Hydro and Power Authority.

Mr. HERRIDGE: Have you the details of basin clearing, compensation and that sort of thing?

Mr. SEXTON: I can tell you these estimates include direct construction costs; they include reservoir clearing and they include sales tax.

Mr. HERRIDGE: Has your company any personal knowledge of these details? I am putting this question because on the Arrow lakes there has not been a single owner approached with respect to compensation, whether it is industrial or farmlands.

Mr. SEXTON: No, we do not have the details.

Mr. HERRIDGE: Then, how can you be certain these costs are correct? For your information, there have been no roads surveyed. How do you know these costs are correct?

Mr. SEXTON: We have a lot of confidence in the British Columbia Hydro and Power Authority.

Mr. HERRIDGE: Mr. Sexton, I know there has been no survey in detail of these various aspects of it. For instance, there have been no surveys in detail in respect of sawmills, roads, property to be compensated, whether it is farm or residential, and so on. In one instance the owner of quite substantial sawmill has not been approached. I was talking to him just before I came down. How can we be certain that these estimates are correct? As you know, these are very large figures and we were not able to get the details from the provincial representatives. I cannot give you a reason for not being able to get them. However, would you say to this committee that you are quite confident all these estimates are accurate?

Mr. SEXTON: Mr. Herridge, I have confidence in what the British Columbia Hydro and Power Authority delivered to us. In some of the estimates I have personal knowledge because my company has had a hand in preparing them. An example of this is Duncan lake. I can only repeat to you that I have every confidence in the integrity of British Columbia Hydro to give us good estimates.

Mr. HERRIDGE: Your company has not made any survey in respect of the clearing of the basins to the standards requested by the west Kootenay rod and gun club?

Mr. SEXTON: No.

Mr. HERRIDGE: You have no personal knowledge in respect of the compensation to owners or in respect of the building of wharves or roads; is that right?

Mr. SEXTON: No.

Mr. HERRIDGE: Nor do you have any personal knowledge in respect of the relocation of power and telephone lines; is that right?

Mr. SEXTON: No. These things are entirely straight forward matters which we assume the Hydro and Power Authority has taken care of.

Mr. HERRIDGE: There are a good many individuals, not only myself, in our district who are wondering how you have arrived at costs before making actual surveys. How do these people know what will be the cost of compensating these owners? We are interested in this aspect of the problem. We should like to know the cost of rebuilding hatcheries to restore the fishing potentialities which will be damaged. I ask these questions because I am interested in finding out the basis upon which you have arrived at your figures. Do you accept the figures of the British Columbia Hydro and Power Authority as being completely accurate?

Mr. SEXTON: We accept those figures as being accurate within the limitations of estimates at this stage of development, yes.

Mr. HERRIDGE: Am I correct in assuming there may be changes in respect of these costs?

Mr. SEXTON: There may be slight changes, but I would expect that these estimates contain adequate contingency allowances to cover the differences.

Mr. HERRIDGE: You think the estimates are adequate to cover the costs of construction and all related costs?

Mr. SEXTON: Yes.

Mr. BYRNE: I should like to ask a supplementary question. Can you tell the committee whether you have based your relocation costs on the so called Canada plan in relation to the Bull river-Luxor project? Whose calculation did you use?

Mr. SEXTON: We used the international Columbia river engineering board figures and then brought them up to date ourselves. We used their quantities, their designs and prepared our own revision of the costs.

Mr. BYRNE: You used their figures or comparable figures in respect of relocation of railways, roads, and other matters raised by the hon. member for west Kootenay?

Mr. SEXTON: I am informed that in respect of the Dorr-Bull river-Luxor project we obtained our figures on reservoir damages from the water resources department of the federal government.

Mr. HERRIDGE: Do you believe that the federal government has accurate figures of the costs in respect of compensation for relocation and clearing of the basins?

Mr. SEXTON: Mr. Herridge, I think that the figures which have been provided us are such that they include sufficient provision for contingencies and can be relieved upon as estimates at this time.

Mr. HERRIDGE: What is the general amount in percentages allowed for contingencies in this type of estimate?

Mr. SEXTON: I cannot tell you that figure in respect of reservoir damages. Normally our contingencies in respect of structures vary between 5 and 15 per cent.

Mr. HERRIDGE: You do not know the contingency percentage allowed for these less definite costs?

Mr. SEXTON: No.

Mr. TURNER: Mr. Chairman, I should like to ask Mr. Sexton several questions. In answer to a question asked previously you said that your report showed that the McNaughton plan would produce 1.85 billion kilowatt hours more at site power at full development than the treaty plan. Do you feel that this added increment power achieved by the McNaughton plan as compared to the treaty plan is economical and would warrant the adoption of the McNaughton plan and the rejection of the treaty plan?

Mr. SEXTON: I do not agree with that statement, Mr. Turner. As I explained when I was presenting our brief, there is a gain of 1.85 billion kilowatt hours per year with the alternative plan. There is also an estimated increased annual operation cost of approximately \$10 million. Using those figures we come out with a cost per kilowatt hour between five and six mills. I also stated in the report that we could do better than that with steam power.

Mr. TURNER: General McNaughton also stated his diversion plan would produce from 360 to 400 megawatts more power than the treaty plan. Do you agree with that statement?

Mr. SEXTON: As I have stated before, our plan is slightly different. For example, we do not have the Duncan lake project included in our plan. The difference between the two plans is 211 megawatts. I guess that is all I can say in that regard.

Mr. BYRNE: Are you taking into consideration the Libby project? If you take that project into consideration is there not a difference of between 200,000 and 360,000 kilowatt hours?

Mr. SEXTON: We are referring to the total system, Mr. Byrne.

Mr. TURNER: Would you tell us what the capital costs are that you have used in respect of the Dorr-Bull river-Luxor scheme as compared to those given in the report of the international Columbia river engineering board of 1959?

Mr. SEXTON: The international Columbia river engineering board figures in 1959 are 144.1 million more or less. Our revised figure is 212.9 million.

Mr. TURNER: Do you agree with Mr. McNaughton when he states that the present cost of the High Arrow dam is greater than the cost of the east Kootenay project?

Mr. SEXTON: No.

Mr. TURNER: You do not agree with that statement?

Mr. SEXTON: We do not agree with that statement because the present estimate of the cost of the High Arrow dam is \$123 million, I believe.

Mr. BYRNE: I believe the figure is \$129 million.

Mr. TURNER: I take it you do not agree either with General McNaughton's testimony wherein he indicated that the capital cost of his total plan would only be \$12 million more than that of the treaty plan?

Mr. SEXTON: Well, this is a rather gray area. The difference in cost between the two plans in our case is some \$34 million without Duncan lake and \$67 million with Duncan lake.

Mr. BYRNE: You have not Duncan lake in your picture but when you add it you arrive at 140 megawatts difference. Is that right? This is what I tried to bring out from General McNaughton but he would not agree under any circumstances this was so.

Mr. SEXTON: As I have explained before, we left Duncan lake out because in the alternative plan it would not be constructed until quite late, in 1988. According to the proper way of developing the alternative plan you would have to build a relatively small structure on Bull river to regulate the Kootenay discharges, and it would not be until some years later that you would raise that structure and then go to Luxor and create the big reservoir and discharge the water down to the Columbia. In the meantime, this relatively small Bull river would do away with the necessity of doing so.

Mr. BYRNE: This is the reason then that we were unable to obtain regulation below Libby, at Bonners Ferry, under the other plan.

Mr. SEXTON: Yes, until you got the big dam built. Actually, you had to have not only the Bull river-Luxor but also the Dorr water pumped downstream before you could approximate the control of floods to 60,000 cubic feet per second at Bonners Ferry.

Mr. HERRIDGE: Mr. Sexton, in view of the unexpected increases in the cost of the construction of High Arrow, you are confident now that the present figure of \$129 million will construct this dam without further increase in cost?

Mr. SEXTON: I can only say that these are the best engineering figures available now, and the people who produced them are competent, reliable people. I can go no further than that.

The CHAIRMAN: Gentlemen, if we have concluded these questions, I will thank Mr. Sexton and Mr. Wilschut for their attendance here today and for their patience.

We are scheduled to meet again at eight o'clock. Our witness will be Mr. C. N. Simpson who has come here from Labrador.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Mr. Chairman, is it not possible for us to question Mr. Simpson tomorrow morning? These meetings are again getting out of hand.

The CHAIRMAN: Tomorrow morning, according to our schedule, we are to have the opportunity to question Mr. J. W. Libby, representing both Casco Consultants Limited and G. E. Crippen and Associates Limited, both of Vancouver, Dr. R. L. Hearn, President of C.B.A. Engineering Company Limited of Vancouver and Dr. Hugh Q. Golder from Toronto.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): A lot of these names have been added since I last saw the list, and it has been bad arrangement if you invited them all to come in this limited period of time. I, for one, protest a great deal against having these meetings day after day, three times a day. It is perfect nonsense.

The CHAIRMAN: Mr. Cameron, the program will each day, I assure you, be discussed in the steering committee and whatever the recommendations of the steering committee may be I will report to the meeting at large, as I have continued to do since we first met. Whatever is the decision of the standing committee on external affairs at large, I will comply with it. I am advised that we have still many witnesses to hear and that these hearings are likely to continue for an extended period of time and long hours.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): You have never answered a question that I have asked repeatedly. You keep referring to the shortness of time. Have you got a date by which the hearings have to be concluded? You have never told me if we have one.

The CHAIRMAN: I do not think I am in a position to state one. I certainly cannot speak on behalf of the government. We have Mr. Davis with us who perhaps has better information since he enjoys the position of parliamentary secretary.

Mr. LEBOE: This is the purpose of the steering committee.

The CHAIRMAN: But surely this is not my responsibility. The steering committee is one which is represented by every party in the house and, Mr. Cameron, I am sure that the New Democratic party will be well represented, and always has been. I do not believe there has ever been a decision taken by the steering committee at which the New Democratic party representation was not there and was not effectively represented. I cannot give any assurance that these long hearings which are going to take a long period of time will be agreeable and convenient to everyone.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am not asking that they be agreeable and convenient; I am asking that they be sane. We are taking a farce of the hearings.

Mr. TURNER: May I say, with all deference to Mr. Cameron, that what as happened, I would suggest, is that because General McNaughton's testimony went on longer than we anticipated originally, the witnesses have been backed up. We now have the case of a witness who was scheduled to appear earlier today, who has come from Labrador and who has an international engineering responsibility. I understand he is being held over here because we got behind schedule. It is because in fairness to the professional witnesses who have come here from all parts of the country, some of whom have international engineering responsibilities on behalf of Canadian engineering firms, that I think the Chairman is asking us to sit the evening to make up that schedule.

Mr. HERRIDGE: I just want to say that in future, in view of the fact that these hearings are bound to go on for some time, we should try to avoid having to meet three times a day. We have to carry on our work as well. I do think it is only fair, and I agree with what Mr. Cameron had to say.

The CHAIRMAN: I want to make it perfectly clear that as Chairman I am in the hands of the committee at large and not in anyone else's hands. I am not in a position to initiate or decide what we do, but, of course, we are under the guidance of the steering committee and the steering committee is under the control of the committee at large. I am satisfied, from what I have already heard from Mr. Herridge, that there are going to be a number of witnesses whom he wants to hear.

Mr. HERRIDGE: I want to hear all of them.

The CHAIRMAN: Mr. Herridge made it perfectly clear that we cannot schedule three union representatives, as we anticipated, in one day. He wants a day for each. If it is going to be one day for each, then we are going to have to work that much longer hours, I suppose. I think this is the fourth day which we have spent with General McNaughton. Some of the answers have been very extensive indeed, and I had hoped General McNaughton's evidence might have been concluded this afternoon. However, that is not so. Presumably we will have to bring the general back, if it will meet his convenience. So I see no alternative but very long hours. If my friends Mr. Cameron and Mr. Herridge can put their heads together and suggest how these matters can be curtailed or reduced in time without doing an injustice to members of the committee and House of Commons, I will be very happy to put these views before the steering committee and before the meeting at large.

Mr. HERRIDGE: I quite agree we have to accommodate ourselves to witnesses who come long distances, particularly the gentleman you mentioned, and particularly if he has international obligations, as you say. However, we may have others here from Vancouver willing to stay two or three days. They will not be too concerned to wait a day or two to get their turn.

The CHAIRMAN: Mr. Herridge, you do appreciate that Miss Ballantine has been in communication with a series of witnesses for several days and that they have been scheduled ahead, so that if there is any delay now we will have to make it up again. We have also the added inconvenience now with respect to some uncertainty about what will happen to the representative from Saskatchewan because that time was scheduled to accommodate Premier Lloyd, and I do not know what the development may be there.

Mr. HERRIDGE: We should allow plenty of spacing so that we do not run into these jams.

Mr. LEBOE: There is another thing; right now we should sit as often as we can if we are going to avoid doubling up on some of these other committees. Very soon other committees will pile up and then it will be difficult for us to attend all the meetings at the same time. We should get down to as much work as we can right now.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I should have been at another committee meeting this morning. Apparently these meetings will coincide. I am suggesting, Mr. Chairman, that you should take a more realistic attitude and not cram too many witnesses in when instead of having a space between the days, they are going to run consecutively all the way through. Invitations have been sent out without proper consideration of the possibility of the length of time which the witness will be required to be on the stand.

Mr. TURNER: I think the steering committee should bear that responsibility; not the Chairman nor the clerk.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I am not blaming the Chairman; he is merely the victim of my wrath.

Mr. TURNER: I might say the steering committee has been unanimous in scheduling these witnesses.

The CHAIRMAN: The meeting is adjourned until eight o'clock.

EVENING SITTING

THURSDAY, April 23, 1964

The CHAIRMAN: Gentlemen, I see a quorum. May we proceed?

I beg to report that the following correspondence has been received since the last meeting: Bernard W. Ford, Edgewood, British Columbia; Mr. and Mrs. R. O. Buerge, Burton, British Columbia; G. L. Guenard, Burton, British Columbia; Apartment & Lodging House Association, Vancouver, British Columbia.

Mr. GELBER: Mr. Chairman, I am sure the committee will be very pleased to hear that the announcement was made in Montreal of the appointment of Professor Maxwell Cohen as Dean of the McGill Law School.

The CHAIRMAN: I have the honour to present a distinguished graduate of another distinguished university: C. Norman Simpson, a graduate of Queen's University, Kingston, Ontario, who has undertaken postgraduate studies in hydraulics and sanitary engineering. Mr. Simpson's professional affiliations are the Association of Professional Engineers of Ontario; the Association of Professional Engineers of Manitoba; the Association of Professional Engineers of British Columbia; the Engineering Institute of Canada; the Canadian Electrical Association; the American Water Works Association; The International Association for Hydraulic Research; and the American Society of Civil Engineers. He has held positions in H. G. Acres & Company Limited since 1941. From 1961 to date Mr. Simpson has been president of the company. In 1959 he was vice-president and general manager of engineering. He was chief engineer of the hydraulic division in 1957, chief hydraulic engineer in 1952, and engineer and assistant engineer in 1941.

With Mr. Simpson is Mr. Saaltink, who is a graduate, in Civil and Hydraulic Engineering, of Delft Technical University in the Netherlands. Mr. Saaltink joined H. G. Acres & Company Limited in 1952, and until 1961 he held positions of engineer in the hydraulic department, and project engineer. In 1961 he was appointed chief engineer of the planning division of Caseco Consultants Limited in Vancouver. Since 1962 Mr. Saaltink has held the position of executive engineer in charge of the Acres office for the Atlantic provinces in Saint John, New Brunswick.

Mr. Saaltink has affiliations with the following organizations: the Association of Professional Engineers of Ontario; the Association of Professional Engineers of British Columbia; the Association of Professional Engineers of New Brunswick; the Engineering Institute of Canada, the Royal Institute of Engineers (The Netherlands); and the American Water Works Association.

During his years of practice as a professional engineer in Canada, Mr. Saaltink has worked on resource development projects throughout the country including many hydroelectric projects. In particular, he has been actively involved in studies of power developments on the Laurie river, the Bersimis, Manicouagan and Outardes rivers, the Saint John river and the Columbia river.

Gentlemen, the first person I recognize is Mr. Davis, and I have no other names on my list. However, first I will ask Mr. Simpson for his preliminary statement. Incidentally, Mr. Simpson's statement has been presented to the

members. I hope they have received it by personal messenger since the meeting was convened this afternoon.

Mr. HERRIDGE: Yes, Mr. Chairman, but we have had no opportunity of reading it, so I think we should ask the witness to read it now.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): This is another reason, Mr. Chairman, why we should not have these meetings so closely together; we are not getting the briefs seven days beforehand.

Mr. C. N. SIMPSON (*P. Eng., President, H. G. Acres & Company Limited*): Mr. Chairman and gentlemen, first of all I would like to make two apologies. My first apology is a minor one. I am sorry to miss the hockey game myself and that you will miss it too, but perhaps somebody can let us know what is happening from time to time. As far as I am concerned, we will not miss very much of it.

My second apology is with regard to my statement. I had planned to have the statement printed in French as well as in English. I just came back from an extended trip and, as people like me sometimes do, I made some changes at the last minute. Unfortunately, there was no time for our people to make the translation. I hope the French speaking members will forgive this situation.

First of all I would like to express my appreciation of being invited to appear before this committee to present a statement and to answer questions concerning the Columbia River Treaty and Protocol. These documents dealing with the cooperative development by Canada and the United States of the water resources of the Columbia river are of prime importance to all Canadians in that they will determine the procedures and arrangements whereby a major renewable resource of Canada will be developed and operated for the benefit of all concerned.

Throughout the period of studies and negotiations leading to the present treaty much effort has been expended by many highly qualified and dedicated individuals in the preparation of a large number of reports and documents. The more important of these are presented and analysed in two volumes released in February and April of this year by the departments of External Affairs and Northern Affairs and National Resources. These volumes in themselves contain a vast amount of information which I could not possibly review in detail in the time available to me for the preparation of this statement. However, from my reading of them I believe that certain facts are apparent which although they have been stated many times before, merit restatement within the context of a broad view of Canada's undeveloped energy resources.

Electric energy is the lifeblood of modern society and a close relationship exists between the per capita consumption of electric energy and the standard of living in any given area. An assured long-term supply of low-priced electric energy is, therefore, one of the cornerstones of our economic structure. The Columbia river is an outstanding source of renewable low-cost electrical energy, but has hitherto not been fully developed. By constructing storage reservoirs in Canada, as is now being proposed, potential firm energy generation downstream in the United States can be increased, damaging floods in Canada and the United States of America can be reduced or eliminated, and conditions will be created which will allow the economic generation of large quantities of power in the river basin in Canada.

Historically, Canada has developed its hydro-electric resources in a very efficient manner to meet the growing demands of the nation for electrical energy; in fact the foresight exercised by those responsible for these developments in the past is often, in retrospect, quite remarkable. As a result, we now have a number of hydroelectric plants which have already been fully depreciated and which are continuing to produce electrical energy at the cost

of operation and maintenance only. In more recent years the Canadian nuclear program has been pursued steadily and effectively, such that we can foresee nuclear power costs being reduced to a level competitive with our remaining undeveloped hydroelectric potential. These two facts, namely, the low cost of energy obtainable from hydroelectric sources once a plant has been depreciated, and the steady and proven trend towards lower costs of nuclear energy, are of prime importance to management of Canadian utilities at the present time in evaluating their long-term expansion plans.

Referring now to the development plans set out in the treaty and protocol, I believe that it is in the long-term interest of this country that the Columbia river be fully developed for generation of hydroelectric power in accordance with the fastest possible schedule consistent with load growth in those areas within economic transmission distance. The treaty and protocol are the key to this development. From the information available to me at the present time it would appear unlikely that the cost of electrical energy from thermal electric or nuclear electric sources will fall below corresponding costs for Columbia river power delivered to Vancouver during the economic life of these developments. After the Canadian investments of capital in the Columbia river generating plants have been repaid, these plants will continue to produce energy but at the cost of operation and maintenance only. There are no other energy sources foreseeable at the present time in British Columbia which would be more attractive.

The question has been raised as to whether or not the detailed agreements and procedures set out in the treaty and protocol are in the best interests of this country. As it concerns the cooperative development of the water resources of a large river by two parties, namely the United States of America and Canada, a fundamental problem is that of sharing of costs and benefits. The treaty and protocol rest on principles formulated by the International Joint Commission for determining and apportioning benefits from the cooperative use of storage of water. These principles have a foundation in electric utility practice, as benefits arising through electrical interconnection of utilities in North America are, broadly speaking, shared equally among the participating parties. However, the complexities faced by the negotiators of the treaty exceeded in complexity the problems normally encountered in working out an interconnection agreement and called for arrangements which are, in some respects, unique. I believe that the proposed agreements pertaining to the Columbia river which have been worked out, and the conditions for sharing of downstream benefits set out in the treaty and protocol, are definitely in the interests of this country.

I should now like to say a few words about the question of alternative schemes for the provision of upstream storage. This is also a highly complex problem which has been the subject of much discussion during the past few years and which has no doubt already been considered and discussed in detail by the committee.

It is recognized that the choice of projects for inclusion in a balanced scheme of development of the resources of any river basin cannot always be based on engineering judgment alone, particularly when the lands bordering the water-courses have been settled to a significant degree. The comparison of alternative combinations of power projects must include a careful assessment of the side effects of these projects on the development of other resources such as fisheries, wild life, agriculture, recreation, tourism, and industry.

These important matters are discussed in the government's presentation paper and the agricultural aspects in particular have been the subject of testimony before this committee. It would appear that the number of people displaced in the alternative plans are approximately equal but that the land area

flooded by the reservoirs proposed in the treaty plan is considerably less than would be the case for the alternative plans.

It is appropriate to mention yet another factor which must be considered in this connection. The ability of a scheme of hydroelectric development to supply the anticipated system loads economically from the time that the first project is commissioned until the time that the output of the last project of the development is completely utilized, is an important criterion in the comparison of alternatives. From this point of view the treaty plans for the development of the Columbia river, including the sale of downstream benefits to the United States of America, serve the power needs of the province of British Columbia better than alternative plans which have been studied.

Within the framework of the proposed agreements between the governments of Canada and the United States of America, with regard to the sharing of downstream power and flood control benefits, each of the storage projects which Canada will undertake to construct, namely the Mica creek, the Arrow lakes, and the Duncan lake storage projects, fulfills an essential function. The Mica creek reservoir will be located upstream of all power plants on the main stem of the Columbia river in Canada and will control the flows passing the sites of these plants. The Duncan lake reservoir will be located at the head of all Canadian developments on the Kootenay river and will supplement the storage regulation provided by the Libby project in the United States. The Arrow lakes reservoir will control the flow across the United States boundary and will modify this flow as required to obtain maximum downstream benefits. Together, these reservoirs are capable of providing effective flood control as well as regulation of river flows in Canada which will allow utilization of virtually all flow passing the projected hydroelectric plants. The built-in flexibility of operation provided by the Arrow lakes project may be of even greater importance in the future than it appears to us at the present, because the Columbia river projects will undoubtedly be part of a Canadian power pool which will include thermal generation near Vancouver, the Peace river project, and in all probability, generating stations in Alberta and Saskatchewan. Taking all of the above mentioned factors into consideration, I believe that the construction of the three storage reservoirs is the proper next step to take in the development of the power potential of the Columbia river in Canada.

It may be appropriate to include in my discussion some reference to the alternative uses to which the water of the Columbia river could be put. The documents I have examined indicate that very preliminary investigations have shown the diversion of water for consumptive uses from the Columbia river basin to other river basins in Canada to be technically feasible but economically unattractive under the present conditions. Nevertheless, it is clearly in the national interest to reserve the right to make such diversions at some future date when different circumstances may prevail. The proposed utilization of the water resources of the Columbia river in its own basin is clearly the only profitable and practical course of action for Canada and it is my impression from reading the relevant documents that this utilization does not preclude alternative water uses, should they become economic or essential in the future.

In summary, I should like to state that I consider the treaty, the protocol, and the agreement on the sale of downstream benefits to the United States of America, together a most profitable and desirable transaction from the Canadian point of view. The construction of the treaty storage projects will secure considerable short-term economic benefits for the citizens of southern British Columbia and will be the key to the future supply of a substantial quantity of very low-cost power in Canada. I know of no other power resource in British Columbia that could be developed as an alternative with the same bene-

ficial results. I have, therefore, no hesitation in recommending that the proposed arrangements be implemented.

Mr. DAVIS: Mr. Simpson, I wonder if you could tell us whether your company has had considerable experience in the field of water resources development or not? Could you give us in very brief terms the credentials of your company?

Mr. SIMPSON: Yes, certainly. Acres was founded in 1924 by the late Dr. Acres, who was the first chief hydraulic engineer for the Ontario Hydro, the company has been in existence continuously since then, a matter of about 40 years. Obviously the development of such a company pretty well parallels the development of Canada.

Until 1940 growth was relatively small; jobs were fairly widespread. But since the early forties there has been a tremendous growth in our Canadian economy particularly in the field of power generation which I think is the one you are interested in.

Acres has been responsible for the design and putting into operation of approximately 50 per cent of all power generating capacity installed in Canada over that period. We now have approximately 3 million horsepower of additional capacity under construction, and we are associated in the design of another six to seven million horsepower at this time which has not yet been authorized for construction.

The company employees number between 400 and 500 engineers, draftsmen, and technicians. It has worked on most of the major rivers of Canada from the Atlantic to the Pacific. Do you think that answers your question?

Mr. DAVIS: Yes.

Mr. SIMPSON: By the way, I might mention just in passing that it is a Canadian company wholly owned and managed by its senior engineers.

Mr. DAVIS: On the first page of your statement you indicate that a great deal of information, reports in various forms and factual data have been available for this review.

Mr. SIMPSON: Yes.

Mr. DAVIS: In your view, is this sufficient to arrive at a definitive plan for the development of a river basin of this scale?

Mr. SIMPSON: Well, it is a difficult question to answer unless you really have been engaged on the job for a considerable period of time; but I would say that it certainly would appear to be completely adequate for the purpose you have in mind.

Mr. DAVIS: Is it your impression that the Columbia river treaty plan is sound from an engineering point of view?

Mr. SIMPSON: From the information we have seen, and bearing in mind the type of people who have been engaged in the investigations of the various resources, yes.

Mr. DAVIS: Would you say it was sound from an economic point of view in the sense that the best sequence of development has been chosen as opposed to the various alternative suggestions open to Canada?

Mr. SIMPSON: Once again we must consider the information available to us and the very little time we have had to dig deeply into it, but certainly the methods which have been used would appear to be sound. The answers certainly would appear to be correct.

Mr. DAVIS: You would say that if the factual basis was appropriate and the methods of obtaining the answers were appropriate, the right answers logically should follow?

Mr. SIMPSON: Yes.

Mr. DAVIS: This is a more general question. Do you think that now is the right time to proceed with the development of the upstream storage in Canada? I am speaking now in economic terms. Could we hold off for a period of years, perhaps, and get a better arrangement?

Mr. SIMPSON: I cannot quite conceive of how you might get a better arrangement. Certainly now is the time to develop some of these renewable resources of ours, if we are ever going to do so.

Mr. DAVIS: We have heard from several witnesses that the value of this upstream storage will tend to decline as thermal plants are built in the Pacific northwest. Would you agree with that general contention?

Mr. SIMPSON: This is possibly correct, yes.

Mr. DAVIS: Assuming appropriate safeguards for its recapture, does the export of power from Canada offend you?

Mr. SIMPSON: Not in the least. I think it is a most sensible course to follow provided we have the proper contracts to protect our own interests.

Mr. DAVIS: Well drawn and accounted in advance.

Mr. SIMPSON: Yes.

Mr. DAVIS: It would not bother you too much to think of leaving Canada's share of the downstream benefits in the United States for a period of years.

Mr. SIMPSON: Not in the least, no.

Mr. DAVIS: You have looked at the treaty in a general way, and the protocol?

Mr. SIMPSON: Yes.

Mr. DAVIS: And the sale agreement. Have you any impression with regard to whether the protocol improves the treaty in any way?

Mr. SIMPSON: I would say the protocol improved the treaty by reason of clearly defining some of the things that perhaps were not too clearly defined in the treaty, and by specifically getting sums of money attached to specific items.

Mr. DAVIS: Would you agree a definition of what constitutes flooding in the United States was a necessary definition and supplement to the treaty.

Mr. SIMPSON: Of what constitutes a flood in the United States?

Mr. DAVIS: By that I mean the protocol does spell out what constitutes a flood?

Mr. SIMPSON: Yes.

Mr. DAVIS: Previous to this the treaty had no definition of what constituted a flood and the United States could make calls for flood control purposes. Now there is a definition of flooding. Would you say that is an advantage to the upstream country?

Mr. SIMPSON: I would say so. To get a definition of everything always is very useful.

Mr. DAVIS: And there is a further clause which requires United States storage to be used first in the event of flooding.

Mr. SIMPSON: Yes.

Mr. DAVIS: And Canadian storage, subsequently?

Mr. SIMPSON: Yes.

Mr. DAVIS: This would be an improvement in your view?

Mr. SIMPSON: Would you repeat that, please?

Mr. DAVIS: The payment for flood control was determined when the treaty was initially negotiated, so the compensation was not in question.

Mr. SIMPSON: Right.

Mr. DAVIS: Subsequently in the protocol it was negotiated that flood be defined, and secondly that the United States evacuate all its storage before any call is made on Canadian storages.

Mr. SIMPSON: Right.

Mr. DAVIS: Would you regard that as an improvement in the conditions?

Mr. SIMPSON: I would say yes.

Mr. NESBITT: Has the word "flood" in general connotation any different meaning than it does in terms of the ordinary dictionary meaning?

Mr. SIMPSON: I do not think there is any difference. I suppose it is a relative term in some respects and requires definition as you are suggesting, sir.

Mr. BYRNE: To a politician it may mean words.

Mr. DAVIS: The treaty said that the price for the downstream benefits which Canada might sell—power—would be determined after the treaty was ratified.

Mr. SIMPSON: Yes.

Mr. DAVIS: The protocol says this must be determined in effect before it is ratified.

Mr. SIMPSON: Yes.

Mr. DAVIS: Would you say this is an improvement?

Mr. SIMPSON: Thinking about it in a personal context, if I were in a deal involving these same considerations myself, I would want to have the money defined ahead of time. Yes, in that regard I think it would be an improvement.

Mr. DAVIS: I have several other questions, but I will now leave it to the other members of the committee. I might conclude by asking you what you think of the Montreal Engineering firm as competitors. They have presented a brief. How do you regard them in terms of their competence and ability to assess projects of this scale?

Mr. SIMPSON: You are putting me on the spot.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Does Mr. Simpson's opinion have much relevance on this point?

Mr. STEWART: The members of the committee in the back of the room cannot hear very well.

Mr. NESBITT: Move up to the front.

Mr. STEWART: There are other persons behind me.

Mr. DAVIS: Would you say they are a competent engineering firm?

Mr. SIMPSON: I am quite happy to answer the question.

Mr. BREWIN: Really, Mr. Chairman, is this sort of question helpful at all? It is apparent this witness' opinions coincide with those of the Montreal Engineering Company Limited in this particular case. I do not want to have to ask him about the opinion he has of other witnesses, and so on. Surely this is quite unnecessary, irrelevant and not helpful.

The CHAIRMAN: I think we have had a good judgment better expressed than I could do it myself.

Mr. BYRNE: As a member of the committee I would be very interested to know whether the Montreal Engineering Company Limited is held in high regard by this organization which apparently has been in business for some

40 years. I think it is germane to the discussion, if the witness feels free to answer the question.

Mr. SIMPSON: Let me put it this way. The engineering business, in Canada is a very competitive one, and we fight vigorously with Montreal Engineering Company Limited and some other very good organizations in this country for all the business that is going. However, I can tell you without any reservations whatsoever that I and all the rest of my company hold the Montreal Engineering Company Limited and its people in the very highest regard. They are exceedingly competent and they are people of integrity. They are the sort of people in whom I would put great confidence if I were a client looking for someone to do a job of hydro engineering. I know this gives a plug to a competitor and I do not particularly want to do that. But, I think the same can be said for all of the other engineering organizations that have been employed by the government.

The CHAIRMAN: Mr. Stewart is fairly quivering for a supplementary question.

Mr. STEWART: I merely want to ask the witness, now that he seems to be getting onto this dangerous ground, if he is fully cognizant of the fact that the evidence given by the chairman of the Montreal Engineering Company and all the various Federal and provincial engineers who testified has been contradictory to the statements made by General McNaughton. Does that not alter your judgment?

Mr. SIMPSON: Not in the least. I have the greatest respect for the general and everything he has done for this country. But, I do believe I am in an ideal position to judge the competence of my competition.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): I have a supplementary question, Mr. Chairman.

Can you tell us if you have some first-hand knowledge of the Columbia river system or are your opinions all based on the documents you have read?

Mr. SIMPSON: Most of our opinions are based on the documents that have been read.

In the early 1950's we did some preliminary investigations for the department of northern affairs to establish the type of structures and approximate costs for some of the developments on the Columbia river.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Which ones?

Mr. SIMPSON: Murphy creek, Mica, Bull river. I think that is the sum total.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Thank you.

Mr. SIMPSON: In addition, along with Shawinigan Engineering Company and GE Crippen and Associates Ltd. we are part of a consortium that expects to undertake the engineering for the Mica development.

Mr. CAMERON (*Nanaimo-Cowichan-The Islands*): Thank you.

Mr. SIMPSON: I might mention here that I do not think this would affect my opinion because I believe Mica is one of the projects that is common to any of the schemes.

Mr. HERRIDGE: And, you do not think there is any question about that at all.

Mr. SIMPSON: About bias?

Mr. HERRIDGE: No, about Mica. Is it understood you all agree on Mica?

Mr. SIMPSON: It is my understanding that Mica is one of the developments that would be common to any of the schemes.

Mr. BREWIN: Mr. Simpson, I wonder if I have the right impression from reading the presentation that you have made. Is it correct to say that your study of this matter is fairly recent?

Mr. SIMPSON: That is right.

Mr. BREWIN: Did it largely consist of reading these two volumes that you referred to in the second paragraph?

Mr. SIMPSON: Yes, and all the other various documents and pieces of paper.

Mr. BREWIN: I wonder if you would mind telling me what were all the other various documents and pieces of paper you read?

Mr. SIMPSON: Would you like to summarize some of these?

Mr. SAALTINK: There has been the Montreal Engineering report.

Mr. BREWIN: When did you get that? If I may say so, the committee received it one or two days ago.

Mr. PUGH: I cannot hear.

Mr. SAALTINK: We received it a day or so ago.

Mr. SIMPSON: I would like to point out that in the course of our work we have had access to most of the documents which are listed in the two publications that you hold in your hand.

Mr. BREWIN: Would it not be a fair proposition to say you read this over and, from the knowledge which you have in the matter, decided to give it pretty well a blanket endorsement? That is the impression I got. Would that be a fair statement?

Mr. LEBOE: Mr. Chairman, Mr. Brewin is putting words in the witness' mouth. That is not fair. Mr. Brewin is trying to make a court out of this and I do not think it is right.

Mr. BREWIN: No, I am not. He does not have to agree with me.

Mr. LEBOE: Ask him if he read any of General McNaughton's material.

Mr. BREWIN: You ask your questions and I will ask mine. I am sure if the Chairman does not think my questions are proper he probably will rule me out of order.

In fairness, perhaps the witness would like to comment on the impression I have that this opinion was prepared fairly hastily, chiefly through reading these two documents that have been filed, namely the presentation and the related documents, and your brief or presentation consists of sort of a blanket endorsement. Would it be unfair to say that?

Mr. SIMPSON: I do not know what you mean by the words "blanket endorsement" and perhaps, without intending to put words into your mouth, I might suggest that these two publications that you mentioned do represent a fairly comprehensive summary of all the factual data that there is and, in that respect, you might say that the information that is available is contained therein and can be studied from an examination of those two particular documents. Further, in our business we approach things always with a jaundiced eye.

Mr. BREWIN: Perhaps you had better explain the word "jaundiced." It does not sound too good. However, I am sure it does not mean anything bad.

The CHAIRMAN: Mr. Brewin, if you are pausing there is a supplementary question from Mr. Turner.

Mr. TURNER: Mr. Chairman, I will wait until Mr. Brewin is finished.

Mr. BREWIN: I thought in fairness to the witness he should explain the words "jaundiced eye".

Mr. SIMPSON: Well, one looks at anything from the top, bottom and side-ways to make sure there is nothing there that would mislead you, is incorrect or unfair, so far as you can determine, and it is in this way we have examined the information.

Mr. BREWIN: I mentioned the words "blanket endorsement" and perhaps that is not a fair characterization. However, at any point when reading this material through did you have any doubt cross your mind in respect of any aspect of it which is discussed? Did you have any doubt about anything which you could suggest to us, or was it all perfectly plain sailing?

Mr. SIMPSON: There are always questions to be answered until you really get digging in the ground and find out exactly what you are into, but I believe—and, I thought I said in answer to a question from Mr. Davis—that the information in this case and at this stage of the development is indeed very complete and much more factual information is available upon which to base a judgment than is normally the case.

The CHAIRMAN: I believe Mr. Turner has a supplementary.

Mr. TURNER: I was just wondering whether Mr. Simpson as a professional man has not within his experience reviewed the work papers of other engineers in order to give either a dissenting or corroborating opinion.

Mr. SIMPSON: We do so regularly.

Mr. TURNER: Is that not within the usual function of a professional man and professional engineer?

Mr. SIMPSON: Correct.

Mr. TURNER: Would it not be somewhat similar to Mr. Brewin or myself taking over a trial at an appeal stage and looking at the trial documents prepared by someone else at the initial stage. Would you not be in a similar position in looking at the documents of the Montreal Engineering Company.

Mr. BREWIN: I do not think my endorsement of the view I was hired to represent would be very helpful.

Mr. SIMPSON: I know so very little about the legal profession I would hesitate to say that there is a parallel there, but in my ignorance I would have to agree that it sounds very much the same.

Mr. TURNER: There is nothing very unusual for you as a professional engineer to have access to preliminary documents of another engineering firm and to be asked to voice judgment on them?

Mr. SIMPSON: That is absolutely right.

Mr. TURNER: As a professional engineer, when you are given access to preliminary documents of another engineering firm, I take it you approach these documents in a professional and advised way?

Mr. SIMPSON: That is absolutely right.

Mr. TURNER: And on the basis of that material you exercise your professional judgment either in corroboration of or in dissent from the judgment of the engineering firm whose judgment you are asked to review?

Mr. SIMPSON: Correct.

Mr. HERRIDGE: I should like to ask a supplementary question, Mr. Chairman. From where did you receive the information on which you based your decision? Who supplied the preliminary papers?

Mr. SIMPSON: Most of the information that we obtained came from the federal department.

Mr. HERRIDGE: Did you have an opportunity to check their calculations and figures?

Mr. SIMPSON: Obviously we could not check all these things because we were not engaged to do a study of that sort. This type of thing takes a great deal of time and expense. Certainly the opinion of the people who have done the work and our knowledge of how they have performed in the past dictates the extent to which you are willing to accept in principle the things they have done. I think I made it clear that we have a very high regard for our competitors the Montreal Engineering Company, C.B.A., and Crippen-Wright, who have been engaged in this work. Certainly the senior people in the department of northern affairs are individuals whom we respect very much in a professional way. They are first class people.

Mr. HERRIDGE: The evidence you are giving is based on information supplied to you and not on information contained in working papers developed as a result of investigations undertaken by your own firm?

Mr. SIMPSON: That is right.

Mr. PUGH: Mr. Chairman, I should like to follow up the point regarding the original or preliminary documents. You stated that if you started to dig into this information a different story would result. How far did you dig into the information? Did you look at the original treaty documents, for example?

Mr. SIMPSON: Yes.

Mr. PUGH: You examined the alternate plan?

Mr. SIMPSON: Yes.

Mr. PUGH: What other documents did you look at?

Mr. SIMPSON: We looked at all the documents which are summarized in these two publications. That is, the Columbia River Treaty and Protocol and related documents, and the Columbia River Treaty and Protocol presentation, both of which documents were published by the departments of External Affairs and Northern Affairs and National Resources.

Mr. BREWIN: Mr. Simpson, I should like to ask you to look at page 4, the last paragraph of your report where you have stated:

It may be appropriate to include in my discussion some reference to the alternative uses to which the water of the Columbia river could be put. The documents I have examined indicate that very preliminary investigations have shown the diversion of water from the Columbia river basin to other river basins in Canada to be technically feasible but economically unattractive under the present conditions.

What documents have you examined in this regard?

Mr. SIMPSON: In this regard I refer to the documents which summarize everything that has been done.

Mr. BREWIN: You have adopted the assertions contained in this presentation which have been based upon the report of Crippen, Wright?

Mr. SIMPSON: Crippen, Wright has done some work in this regard.

Mr. BREWIN: Have you read their report?

Mr. SIMPSON: Yes, we have read the Crippen, Wright report as well as the information from Crippen, Wright contained in this document.

Mr. BREWIN: You have read the versions of the Crippen, Wright report contained in the government presentation?

Mr. SIMPSON: That is right.

Mr. BREWIN: You state further in the last paragraph on page 4 of your submission:

Nevertheless it is clearly in the national interests to reserve the right to make such diversions at some future date when different circumstances may prevail.

Is it your opinion that it is important to follow that course?

Mr. SIMPSON: Yes.

Mr. BREWIN: You then continue as follows:

The proposed utilization of the water resources of the Columbia river in its own basin is clearly the only profitable and practical course of action for Canada—

I point out to you that you stated before that in respect of the diversions of water from the Columbia river basin to other river basins there are indications that they are technically feasible but economically unattractive, but that these rights should be preserved.

Mr. SIMPSON: I think that is a correct statement in respect of consumptive uses, yes.

Mr. BREWIN: Yes. You then continue to state:

The proposed utilization of the water resources of the Columbia river in its own basin is clearly the only profitable and practical course of action for Canada and it is my impression from reading the relevant documents that this utilization does not preclude alternative water uses, should they become economic or essential in the future.

Are you giving the impression there that from reading the documents the utilization outside the basin of the water is permitted under the terms of the treaty?

Mr. SIMPSON: There certainly are clauses in the treaty that permit of diversion for various purposes at different periods of time.

Mr. BREWIN: That is true, but is this what you are referring to in your statement?

Mr. SIMPSON: Yes.

Mr. BREWIN: Are you referring to explicit diversions within the Columbia basin or are you referring to possible diversions for consumptive purposes outside the basin, a subject which is discussed earlier in this paragraph?

Mr. SIMPSON: We refer to diversions of the river basin in the distant future which may be economic or of importance to the country.

Mr. BREWIN: I am afraid I have not made my question clear. You state:—it is my impression from reading the relevant documents that this utilization does not preclude alternative water uses, should they become economic or essential in the future.

Are you there referring to alternative water uses outside or inside the basin? I am not clear on that point.

Mr. SIMPSON: We are referring to alternative water uses outside the basin.

Mr. BREWIN: Would you tell us what documents you read which led you to this impression?

Mr. SAALTINK: First of all, my impression is that for consumptive uses diversions are permitted during the life of the treaty. As far as alternative uses after expiration of the treaty are concerned, it is my impression that we will have the same rights that exist at the present time.

Mr. BREWIN: You refer here—and I would like to press this question—to the reading of relevant documents. I wonder what documents you found relevant to arrive at this legal opinion?

Mr. SIMPSON: It is our impression from what the documents say. Certainly we would not presume to give a legal opinion. This is our understanding of what the treaty and the attached documents do say about diversions.

Mr. SAALTINK: There is the treaty and there are the protocol and the comments thereon.

Mr. BREWIN: Do you know, for example, what the definition of consumptive use is?

Mr. SAALTINK: I think it is given in these documents.

Mr. BREWIN: It is in the treaty definitions.

Mr. LEOE: It appears on page 116.

Mr. BREWIN: It is also on page 59 of the green book.

Mr. SIMPSON: Would you like it read, sir?

Mr. BREWIN: No. I just wondered if you would look at it and I wondered if you would care to express an opinion, and the basis for it, as to whether a use which is what might be called a multiple purpose use, was a consumptive use as defined in subsection (e), where it is partly for generation of hydroelectric power and partly for irrigation?

Mr. SIMPSON: Hydroelectric power is excluded, is it not? It seems to me that is the only use that one might not put water to.

Mr. BREWIN: This is a key proposition. I want to know if your impression here is based upon any careful investigation of the matter, whether you have given thought to the multiple purpose project where you have some power development some irrigation developments, and whether that is a consumptive purpose as defined here.

Mr. SIMPSON: Certainly that is a legal matter.

Mr. BREWIN: So you are not going to express even an impression of that?

Mr. SIMPSON: I would rather not.

The CHAIRMAN: I have Mr. Stewart and Mr. Pugh on my list.

Mr. STEWART: I will not ask my question now.

Mr. PUGH: Were you here during parts of this morning and this afternoon?

Mr. SIMPSON: I was not.

Mr. PUGH: I will not ask any questions then.

The CHAIRMAN: I hate to think this hockey game is of such compelling importance that members have no more questions to ask.

Mr. PUGH: Too many scores are being made right here.

Mr. BREWIN: You are not encouraging us, I hope, to start all over again, are you?

The CHAIRMAN: I thank you for your patience tonight. Our witnesses for tomorrow at nine o'clock are Mr. J. W. Libby, representing Casco Consultants Limited, G. E. Crippen and Associates Limited, both of Vancouver, Dr. R. L. Hearn, President of C.B.A. Engineering Company of Vancouver, and Dr. Hugh Q. Golder of Toronto.

Mr. TURNER: What time did you say we were sitting tomorrow?

The CHAIRMAN: Nine o'clock. I believe the Casco documents have already been distributed.

Mr. RYAN: Is it proposed that we sit tomorrow afternoon?

Mr. NESBITT: Notices have been sent out that we will sit tomorrow at 3:30 p.m.

The CHAIRMAN: I have been advised that notices have been sent out pursuant to the decision of our steering committee. It is approved by the committee at large. We will meet at nine o'clock and again at 3:30.

Mr. TURNER: Mr. Chairman, I understand that there will be two briefs presented tomorrow, each of them being short so that there is a very good chance that we will be able to conclude the meeting by 11 o'clock tomorrow morning.

The CHAIRMAN: The meeting is adjourned.

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